

NOTICE

This opportunity is being released to Deliverable Based IT Services (DBITS) Contractors pre-qualified as a result of Minority Business Enterprise (MBE) RFP #0A1139.

Only Contractors pre-qualified in the Applications Development and Maintenance Transition Planning Category are eligible to submit proposal responses and to submit inquiries. The State does not intend to respond to inquiries submitted by organizations not pre-qualified in this Technology Category.

An alphabetical listing of Contractors pre-qualified to participate in this opportunity follows:

1. Advocate Technical Services
2. American Business Solutions
3. Ardent Technologies, Inc.
4. CDO Technologies, Inc.
5. Cluster Software, Inc.
6. Comptech Computer Technologies
7. Digitek Software, Inc.
8. Diversified Systems, Inc.
9. Evanhoe & Associates
10. Fine Citizens
11. Flairsoft
12. Halcyon Solutions, Inc.
13. Logic Software, Inc.
14. Optimum Technology
15. Proteam Solutions, Inc.
16. Sophisticated Systems, Inc.
17. Srisys, Inc.
18. Stellar Innovations & Solutions, Inc.
19. Strategic Systems, Inc.
20. TMH Solutions
21. Unicon International, Inc.
22. Vana Solutions
23. Ventech Solutions, Inc.
24. Vertex

Statement of Work Solicitation

 <p>State of Ohio Ohio Department of Developmental Disabilities County Board Cost Reports Project Statement of Work</p>	DBITS Solicitation ID No.	Solicitation Release Date
	DBDMR-16-03-001	04-18-2016

Section 1: Purpose

The purpose of this Project Statement of Work (SOW) is to provide the Ohio Department of Developmental Disabilities (DODD) with information technology services in the Applications Development and Maintenance Transition Planning Technology Category. The State is seeking a Pre-qualified Contractor, herein after referred to as the “Contractor”, to furnish the necessary personnel, equipment, material and/or services and otherwise do all things necessary for or incidental to the performance of work set forth in Section 3, *Scope of Work*.

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Timeline Dates

- SOW Solicitation Released to Pre-Qualified Contractors: April 18, 2016
- Inquiry Period Begins: April 18, 2016
- Inquiry Period Ends: April 27, 2016
- Proposal Response Due Date: May 2, 2016 1:00 PM

Section 2: Background Information

2.1 Agency Information

Agency Name	Department of Developmental Disabilities (DODD)		
Contact Name	Michelle Burk, CIO	Contact Phone	614.466.2809
Bill to Address	Attn: Kim Lewis, 30 East Broad Street, 12 th floor Rhodes Office Tower, Columbus Ohio 43215		

2.2 Project Information

Project Name	County Board Cost Reports
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<p>Project Background & Objective</p>	<p>The project and scope of work covers the Department of Developmental Disabilities here after known as DODD. DODD Information Technology Services request to enter into a contract to provide services to utilize the requirements gathered from DODD Fiscal to solicit a Contractor to develop a new relationally integrated computer system for DODD Fiscal. This system will replace the existing Microsoft Excel manual process used to collect cost report information from county boards of developmental disabilities in the state of Ohio including related processing and reporting activities.</p> <p>DODD Fiscal desires a secure, web-based, single, integrated relational database management system, here after known as “system”, which allows a single point of entry, processes the workflow of information from one section or program area to another, provides accurate outputs in the form of displays and reports.</p> <p>The DODD Information Technology Services group working with DODD Fiscal has already compiled substantial documentation on their business processes. This includes user manuals, data dictionaries, narratives, forms, law and rules, flow charts. Subject matter experts (SME) are on-hand for further explanations. Using this documentation and detailed requirements document DODD Information Technology Services is proceeding with the competitive procurement process for the development and implementation of the system.</p> <p><u>BACKGROUND & OBJECTIVE</u></p> <p>The State of Ohio Department of Developmental Disabilities (DODD) is the 6th largest state agency with oversight for over 100,000 individuals served by the 88 county boards of developmental disabilities. DODD administers 5 Medicaid waivers supporting almost 40,000 individuals with over 15,000 providers of service to the waiver participants. The mission of DODD is continuous improvement of the quality of life for Ohio’s citizens with developmental disabilities and their families. Our vision is that Ohio’s citizens with developmental disabilities and their families will experience lifestyles that provide opportunities for:</p> <ul style="list-style-type: none"> • Personal security • Physical and emotional well-being • Full community participation • Productivity • Equal rights <p>DODD has a rich history in developing .NET and MS Dynamics CRM systems with internal staff and blended teams. Currently, DODD has identified a need for a system that will benefit from a unified team for development. The vision is that County Board Cost report system would be developed by the contractor with Architectural, PMO and Business Analyst supports from DODD to ensure architectural, development and software development lifecycle activities align with DODD processes. The selected contractor will work closely with the aforementioned DODD ITS staff as well as the DODD business partners to review and validate requirements that have been collected, develop the iterative project plan using AGILE development methodologies, develop the application consistent with DODD architectural guidance and support quality assurance testing, user acceptance testing and training activities.</p> <p>DODD presently collects cost report information from the 88 county boards of via excel spreadsheets. This process is inefficient and leads to repeated emailing and retransmission of spreadsheets in order complete the process. The cost report data received from counties is critical to DODD funding allocations and audit requirements. DODD is seeking to implement an electronic solution to exchange data from our county business partners in a more efficient, secure and technologically current means.</p>
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Expected Project Duration	As mentioned above DODD has collected initial user stories/requirements and associated artifacts. Those are attached to this procurement request. To date rough order of magnitude estimates of project duration reflect 6-12 month development effort. Actual timelines may vary +/- depending on technical approach and acceptance of high level and low level designs by DODD and DODD business.
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2.3 Project Schedule

Week of	Task
May 23, 2016	Project Start Date
May 23, 2016	Initial Project kick off meeting
May 30, 2016	Functional Design and Technical Design Documents acceptance
May 30, 2016	Project Plan acceptance
June 6, 2016	Iteration planning sessions
June 27, 2016	Iteration 1 complete *
June 27, 2016	Business “show and tell” completed
	Using 4 week iterations or” sprints” the contractor - Iterative planning, QA, UAT and Show and tell exercises will continue until project complete

2.4 Project Milestones – Each iteration indicates a milestone event as a significant piece of functionality should be delivered

Date	Milestone
6/27/16	Iteration 1 complete
7/29/16	Iteration 2 complete
9/2/16	Iteration 3 complete
10/7/16	Iteration 4 complete
11/11/16	Iteration 5 complete

2.5 Contractor’s Work Effort Requirement
 The Contractor’s full-time regular employees must perform at least 70% of the effort required to complete the Work. The Contractor may use its personnel or subcontractor personnel to meet the remaining 30% of the effort.

2.6 Ohio Certified MBE Set-Aside Requirement
 Ohio Certified MBE Set-Aside Requirement

Section 3: Scope of Work

3.1 Description of Scope of Work

Attached please find documents that describe the existing manual process and “to be” electronic system. The scope of the effort is specifically related the county cost report system project as described below. Additionally the supporting user stories should be considered part of the in scope exercise. Activities out of scope are hardware and software for the application. As noted this system will be housed on DODD procured resources at the State of Ohio Computer Center (SOCC). Hardware configuration will be load balanced (F5) 4 x servers with MS SQL server 2014 as the database repository. DODD will supply software as well including applicable OS and IIS and data base servers. Security for the application will interface with the DODD Secure Entitlements Management System (SEMS). The application will be constructed to leverage the SEMS interface.

Technical Development (system programming) – This project must be written utilizing a MVC5 architecture in C# and Microsoft SQL Server 2014, the Contractor must have expert level knowledge of these platforms.

Project Management - The Contractor must provide Project Management for the duration of the project. The Contractor must adhere to the accepted Project Plan and provide Weekly Status Reports that document at a minimum the progress, issues and next steps for the project. Additionally, the Contractor must provide DODD Information Technology Services with a not to exceed fixed price per deliverable; a payment schedule tied to proposed project milestones and acceptance of each deliverable; and maintain logs for project issues and risks.

Specific Software development standards are attached in **Appendix A**.

General information related to the DODD Secure Entitlements Management System may be found in **Appendix B**.

Background

Under the cost-based reimbursement system, it is the State of Ohio's (ODJFS) responsibility to monitor and audit its sub-recipients as Federally required by the Center for Medicare and Medicaid Services (CMS). The Ohio Department of Developmental Disabilities (DODD) submits annual cost reports to ODJFS for the (88) County Boards of DD (CBDD) and (9) COGs as a result of the cost based activity. It is the responsibility of DODD to ensure timely reviews and audits of its sub-recipients in order to settle the associated costs for the period under review.

The Department of Developmental Disabilities may conduct audits of the services and programs that either receive funds through the department or are subject to regulation by the department. The official audits for the annual cost reports are conducted via a letter of arrangement between DODD and the Auditor of State and in accordance with procedures prescribed by DODD. However the cost reports are also subject to audit by DODD, ODJFS and CMS at their discretion. Records, documentation and supplemental worksheets used to prepare the cost reports must be maintained for audit purposes.

Cost reports must be submitted annually by April 30th of the subsequent year by COGs and CBDD. Costs incurred by a COG on behalf of the CBDD are audited first and included in the CBDD income and expenditure report. Records created or received by the department in connection with an audit are not public records, however a Comprehensive Cost Revenue and Expenditure Report is released by DODD annually and can be accessed on the department website.

The current annual cost report is an Excel compilation of worksheets and inter-related schedules. All reporting must be manually manipulated. This manual process of preparation, review, submission, audit, adjustments and settlement may take as long as 2 years with mechanism for tracking the multitude of variables from start to finish.

Reference: ORC 5126.12 and Application for a §1915(c) HCBS Waiver, Appendix 1-2(c).

Project Purpose

The purpose of this project is to develop a web-based, automated, fully integrated system which will enable COGs and CBDD to prepare, review and submit required annual cost reports to DODD as prescribed.

Section 3: Scope of Work

This reporting methodology has four primary goals.

- Provide a consistent method to capture, analyze and publicize annual expenditures and income for each of Ohio's CBDD.
- Provide a Medicaid compliant cost-reporting mechanism that will enable DODD to determine Medicaid & non-Medicaid reimbursable cost rates for Medicaid funded services provided by all county boards and their contract agencies.
- Increase efficiencies through paperless processing, reduction in data entry errors, COG to CBDD integration, built in work flow and tracking, automated association and retention of documentation for audit purposes.
- To provide a decision support system through archival of data that will help stakeholders create effective strategies to accomplish their organizational goals.

Roles Supported by the System

Roles supported by the new County Board Cost Report System as follows:

- Preparer – data entry personnel – could be located at the local CBDD, COG or an outside contractor (Count = 100)
- Reviewer - generally a fiscal administrator at the COG or CBDD (Count = 100)
- Submitter – CB Superintendent – requires attestation of report content – electronic signature (Count = 100)
- DODD Auditor of State (AOS) – ability to edit reports for adjustments and create final audit report (Count = 30)
- DODD Audits – Receives submitted report from County Board and coordinates adjustments, negotiations and final settlements, generates Comprehensive Cost Report (Count = 5-10)
- DODD Fiscal – Receives audited report, initiates and tracks findings and payments associated with reports (Count = 5-10)
- JFS – Access to audit reports at will; receives Comprehensive Cost report from DODD Audits (Count = Unknown)
- DODD (Read Only) – other DODD personnel who may be granted access to view reports and their supporting documentation such as Legal (Count = 5-10)

3.2 User Interface

Every screen must follow consistent aesthetic standards that must include attributes such as:

The fields used in all forms shall be wide enough to accommodate at least 95% of expected entries without requiring either horizontal or vertical scrolling, except for fields whose input exceeds 10 words, where vertical scroll bars shall become enabled if the user enters enough information to force a line break

For fields of known maximum length, such as the 10 characters of postal code (ZIP+4, plus hyphen), the fields shall not be wider than necessary to contain the expected entries.

Each page in the website shall have a menu bar with links to the major pages (major pages being defined as the home page and those other pages directly accessible from the home page). The menu options shall change font color, style, and/or size when the user hovers

Sample CB cost reports (Excel Spreadsheet) and Instructions will be attached. **Attached Appendix C.**

Section 3: Scope of Work

3.3 User Stories

The list of changes provided in Project Purpose above is a summary of the primary changes needed in the system functionality. User stories will be provided to guide in the further explanation and identification of needed functionality changes. **Attached Appendix D.**

3.4 Database

There is no existing database. Therefore database structure will need to be developed. The developed database will be consistent with DODD database standards and will not employ techniques or processes such as change data capture/change tracking (CDC/CT); but instead will utilize application processes to create audit log(s).

3.5 Security

Due to the nature of work contained in this Statement of Work, additional Security and Privacy requirements are contained in **Supplement 1**. The Contractor must accept and meet these requirements.

3.6 Assumptions and Constraints

Assumptions	It is assumed the contractor will supply some level of Project Management (PM) and Business Analyst (BA) support. DODD will augment this area with PM, BA QA and architectural support
	Selected contractor will develop the system to conform with DODD development standards
	Client records may include HIPAA or Protected Health Information (PHI) and as such confidentiality must be maintained
	Brand new system supporting a new program
	There will be no legacy data to import
	Eighty eight (88) counties with users will need to access the system
	Anticipate 500 concurrent users (roughly 5 per county) with peak during submission timeframes
	Web based application for remote access and usage; Developed solution should be usable via mobile platforms (responsive design)
Constraints	Contractors must work on-site at the location described in section 3.9.
	Contractor will use DODD’s TFS system for Source code management. Source code will need be checked in daily using DODD’s established Change Management process and all source code, database objects, schema, documents and any other computer artifacts generated for the development of the “system” will become DODD’s assets in terms of ownership.
	Contractor will perform Show and Tells at the end of each iteration/end of the month, to demonstrate functionality developed in the iteration cycle to product owners and all DODD identified stakeholders of the system.
	Database Design work will be carried with consultation and inputs from DODD’s Data architects and Database Administrative team
	All documentation and system interfaces will contain DODD branding (to be supplied by DODD) and will not contain any Contractor logos or brand.

Section 3: Scope of Work

	Any Network changes, server changes or others needed for the development of the “system” will adhere to OIT and DODD Network and Security policy and will be implemented by DODD’s Network infrastructure team
	The Contractor will mitigate any issues / risks that are discovered by the OIT penetration testing of system while in testing phase of the system. Additionally, code will be compatible with MaCafee Sentrigo monitoring tools
	The Contractor will supply dataflow diagrams and data dictionary along with approach for audit tracking
	The Contractor will utilize ServiceNow ticketing system for change control, service request and incident reporting in accordance with DODD policy
	The Contractor will utilize the OnBase software for document imaging solution
	Load / Performance testing of the application will be conducted by the Contractor to meet user specification and acceptable response times that will be defined jointly by the DODD enterprise architecture team and the contractor

3.7 Detailed Description of Deliverables

A kickoff meeting will be held at a location and time selected by the Agency where the Contractor and its staff will be introduced to the Agency.

Deliverable Name	Deliverable Description
Project Plan for the County Board Cost Report Application	The project plan shall include a proposed project schedule, project budget, status reports, and documentation on issues (log), risks, and assumptions. The detailed project schedule shall align with the mandatory project sign off and completion date of May 30, 2016.
Finalized Functional and Business Requirements Document for County Board Cost Report Application	The documentation for this deliverable shall clearly verify final, Functional and Business Requirements based on analysis of the detailed requirements and discussions with the SMEs.
Functional Design and Technical Design Documents	This documentation will include finalized design documents for the County Board Cost Report Application.
Test Plan	This documentation shall include a detailed Test Plan for UAT
Test Plan Results	Publish test results (UAT of Test Plan) Review and acceptance UAT including load and performance testing.
Working Code	Delivery of the production source code for the County Board Cost Report Application.
User Manual and Technical Documentation	Provide User Manual and Technical Documentation for review and acceptance. The User Manual should include each role identified in Attachment B. Technical Documentation must fully document the solution and provide adequate detail for State staff to support the application. Note: DODD will assign a state BA, The contractor will work with DODD assigned BA to develop training materials

Deliverable Name	Due Date (If applicable)	Payment Eligible? Yes/No	Acceptance Criteria
Project Plan	Within the Scope of the Project Timeline	No	Agency approval of deliverable
Finalized Functional and Business Requirements Document for CTP	Determined in Approved Project Plan	No	Agency approval of deliverable
Functional Design and Technical Design Documents	Review and acceptance of FDD and TDD	No	Agency approval of all FDD and TDD tasks
Test Plan	Review and acceptance of determined in project plan.	Yes – 20% of the not-to-exceed fixed price and approval of deliverables listed above including Functional design and technical design documents, Finalized Functional and Business Requirements Document for CTP and Project Plan	Agency approval of all Testing and regression tasks
Test Plan Results	Determined in project plan	No	Agency approval UAT
Working Code	Determined in project plan	Yes – 20% of the not-to-exceed fixed price with approval of Test Plan Results and Working Code. Working code is defined as code promoted to and successfully passing QA testing. The 20% will be allocated across segments of the completed iterations	Agency approval of all code promotion tasks
User Manual and Technical Documentation	Determined in project plan	Yes – 15% of the not-to-exceed fixed price with approval of User Manual and Technical Documentation	Agency approval of User Manual and Technical Documentation.
Project sign off and completion	Determined in project plan	Yes – remaining 45% of the not-to-exceed fixed price.	Completion of Agency testing for full system and acceptance of all deliverables.

3.8 Roles and Responsibilities		
Project or Management Activity/Responsibility Description	Contractor	Agency
Provide funding, documentation, feedback, availability, and approval for the success of the Statement of Work.		X
Provide appropriate access.		X
DODD Information Technology Services will have environments ready prior to the start of the project.		X
DODD Information Technology Services will make its project manager and other necessary personnel available to the Contractor's project manager and team members to fully acquaint them with the DODD Information Technology Services IT environment. A contact person will be named who will be DODD Information Technology Service's principal agent with respect to all technical issues involved in the project. DODD Information Technology Services will provide the Contractor with telephone number and e-mail address for this contact person, and a backup to cover for the contact person in the event the contact person is absent from work.		X
DODD Information Technology Services will provide virtual server environments for the completion of this work. Additional software tools will be provided to successfully complete the assigned duties. These environments cannot be accessed remotely and must be accessed from a State controlled facility.		X
Provide deliverables specified in the Statement of Work Solicitation	X	
Report all issues that may impact the project timeline in writing to DODD Information Technology Services.	X	
Provide weekly status reports to DODD Information Technology Services and updated project schedules as appropriate. While required, Project Management artifacts are not eligible for payment. Costs related to Project or Management Activity/Responsibility must be included in the proposed deliverable.	X	
Contractor must provide personnel to be on-site as needed.	X	

3.9 Restrictions on Data Location and Work

The Contractor must perform all Work specified in the SOW Solicitation and keep all State data within the United States, and the State may reject any SOW Response that proposes to do any work or make State data available outside the United States.

3.10 Resource Requirements

- DODD will provide a co-located space in the Rhodes Tower located at 30 East Broad Street, Columbus, OH 43215; Franklin County, with suitable seating for the project team.
- DODD will supply computers, software, Internet connectivity, projector and conference line.
- All resources sourced under the contract will be subject to DODD background checks.
- DODD Information Technology Services will maintain virtual server environments prior to the project start date and thereafter.
- Contractor is required to work with DODD Information Technology Services staff and designees. DODD Information Technology Services and DODD normal working hours are 8:00am to 5:00pm with a one-hour lunch period for a total of eight working hours per day. Contractor may have to work under unusual working conditions which may include operation of a computer terminal for long periods of time, working in excess of eight hours per day, working on Saturdays and/or Sundays.

Section 4: Deliverables Management

4.1 Submission/Format

PM Artifact/Project Work Product	Submission	Format
Project Plan for the County Board Cost Report Application	E-mail and specified SharePoint location	Microsoft Project
Finalized Functional and Business Requirements Document for CTP	E-mail and specified SharePoint location	Microsoft Word or PDF
Weekly Status Reports	E-mail and specified SharePoint location	Microsoft Word or PDF
Functional Design and Technical Design Documents	E-mail and specified SharePoint location	Microsoft Word or PDF
Test Plan	E-mail and specified SharePoint location	Microsoft Word or PDF
Test Plan Results	E-mail and specified SharePoint location	Microsoft Word or PDF
Working Code	FTP	MVC5 and SQL Server
User Manual and Technical Documentation	E-mail and specified SharePoint location and hardcopy original	Microsoft Word or PDF

4.2 Reports and Meetings

- The Contractor will meet with the CIO weekly and provide written progress reports of this project. These are due to the by the close of business on Monday each week throughout the life of the project.
- The progress reports shall cover all work performed and completed during the week for which the progress report is provided and shall present the work to be performed during the subsequent week.
- The progress report shall identify any problems encountered or still outstanding with an explanation of the cause and resolution of the problem or how the problem will be resolved.
- The Contractor will be responsible for conducting weekly status meetings with the Agency assigned Project Manager and/or designee. The meetings will be held at a time and place so designated by the Agency assigned Project Manager and/or designee – unless revised by the Agency Project Manager and/or designee. The meetings can be in person or over the phone at the discretion of the Agency Project Manager and/or designee.

4.3 Period of Performance

The period of performance will last from the date of inception of the executed contract through June 30, 2017 or until all of the deliverables are completed, accepted, and delivered.

4.4 Performance Expectations

This section sets forth the performance specifications for the Service Level Agreements (SLA) to be established between the Contractor and State. Most individual service levels are linked to “Fee at Risk” due to the State to incent Contractor performance.

The Service Levels contained herein are Service Levels this SOW Solicitation. Both the State and the Contractor recognize and agree that Service Levels and performance specifications may be added or adjusted by mutual agreement during the term of the Contract as business, organizational objectives and technological changes permit or require.

The Contractor agrees that 10% of the not to exceed fixed price for the SOW will be at risk (“Fee at Risk”). The Fee at Risk will be calculated as follows:

Total Not to Exceed Fixed Price (NTEFP) of the SOW	x	10 %	=	Total Fee at Risk for the SOW
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Furthermore, in order to apply the Fee at Risk, the following monthly calculation will be used:

Monthly Fee At Risk	=	Total Fee at Risk for the SOW
		Term of the SOW in months

The Contractor will be assessed for each SLA failure and the “Performance Credit” shall not exceed the monthly Fee at Risk for that period. The Performance Credit is the amount due to the State for the failure of SLAs. For SLAs measured on a quarterly basis, the monthly fee at risk applies and is cumulative.

On a quarterly basis, there will be a “true-up” at which time the total amount of the Performance Credit will be calculated (the “Net Amount”), and such Net Amount may be off set against any fees owed by the State to the Contractor, unless the State requests a payment in the amount of the Performance Credit.

The Contractor will not be liable for any failed SLA caused by circumstances beyond its control, and that could not be avoided or mitigated through the exercise of prudence and ordinary care, provided that the Contractor promptly, notifies the State in writing and takes all steps necessary to minimize the effect of such circumstances and resumes its performance of the Services in accordance with the SLAs as soon as reasonably possible.

To further clarify, the Performance Credits available to the State will not constitute the State’s exclusive remedy to resolving issues related to the Contractor’s performance. In addition, if the Contractor fails multiple service levels during a reporting period or demonstrates a pattern of failing a specific service level throughout the SOW, then the Contractor may be required, at the State’s discretion, to implement a State-approved corrective action plan to address the failed performance.

SLAs will commence when the SOW is initiated.

Monthly Service Level Report. On a monthly basis, the Contractor must provide a written report (the “Monthly Service Level Report”) to the State which includes the following information:

- Identification and description of each failed SLA caused by circumstances beyond the Contractor’s control and that could not be avoided or mitigated through the exercise of prudence and ordinary care during the applicable month;
- the Contractor’s quantitative performance for each SLA;
- the amount of any monthly performance credit for each SLA;
- the year-to-date total performance credit balance for each SLA and all the SLAs;
- upon state request, a “Root-Cause Analysis” and corrective action plan with respect to any SLA where the Individual SLA was failed during the preceding month; and
- trend or statistical analysis with respect to each SLA as requested by the State.

The Monthly Service Level Report will be due no later than the tenth (10th) day of the following month.

SLA Name	Performance Evaluated	Non-Conformance Remedy	Frequency of Measurement
Delivery Date Service Level	The <u>Delivery Date Service Level</u> will measure the percentage of SOW tasks, activities, deliverables, milestones and events assigned specific completion dates in the applicable SOW and/or SOW project plan that are achieved on time. The State and the Contractor will agree to a project plan at the commencement of the SOW and the Contractor will maintain the project plan as agreed to throughout the life of the SOW. The parties may agree to re-baseline the project plan throughout the life of the SOW. Due to the overlapping nature of tasks, activities, deliverables, milestones and events a measurement period of one calendar month will be established to serve as the basis for the measurement window. The Contractor will count all tasks, activities, deliverables, milestones and	Monthly Fee At Risk	Project Schedule

	<p>events to be completed during the measurement window and their corresponding delivery dates in the applicable SOW and/or SOW project plan. This service level will commence upon SOW initiation and will prevail until SOW completion.</p> <p style="text-align: center;">Compliance with delivery date is expected to be greater than 85%</p> <p>This SLA is calculated as follows: “% Compliance with delivery dates” equals “(Total dates in period – Total dates missed)” divided by “Total dates in period”</p>		
<p>Deliverable Acceptance Service Level</p>	<p>The Deliverable Acceptance Service Level will measure the State’s ability to accept Contractor deliverables based on submitted quality and in keeping with defined and approved content and criteria for Contractor deliverables in accordance with the terms of the Contract and the applicable SOW. The Contractor must provide deliverables to the State in keeping with agreed levels of completeness, content quality, content topic coverage and otherwise achieve the agreed purpose of the deliverable between the State and the Contractor in accordance with the Contract and the applicable SOW. Upon mutual agreement, the service level will be calculated / measured in the period due, not in the period submitted. Consideration will be given to deliverables submitted that span multiple measurement periods. The measurement period is a quarter of a year. The first quarterly measurement period will commence on the first day of the first full calendar month of the Contract, and successive quarterly measurement period will run continuously thereafter until the expiration of the applicable SOW.</p> <p style="text-align: center;">Compliance with deliverable acceptance is expected to be greater than 85%</p> <p>This SLA is calculated as follows: “% Deliverable Acceptance” equals “# Deliverables accepted during period” divided by “# Deliverables submitted for review/acceptance by the State during the period”</p>	<p>Monthly Fee At Risk</p>	<p>Project Schedule</p>

<p>Scheduled Reports Service Level</p>	<p>The Scheduled Reports Service Level will measure the receipt of Reports within IDA schedule or other established time frames.</p> <p>This SLA is calculated as follows: “Scheduled Reporting Performance” equals “(Total Number of Reports Required – Total Reports Missed/Missing)” divided by “Total Number of Reports Required”</p>	<p>Monthly Fee At Risk</p>	<p>Project Schedule</p>
<p>System Test Execution Exit Quality Rate</p>	<p>The System Test Execution Exit Quality Rate will, prior to UAT, be determined using the results of Contractor generated pre-test strategy, executed testing cases including functionality, performance, integration, interfaces, operational suitability and other test coverage items comprising a thorough Contractor executed system testing effort. Regression Testing must be performed as necessary. “System Test Execution Exit Quality Rate” means the inventory of all test cases performed in conjunction with Contractor system testing, or testing otherwise preceding the State’s User Acceptance Testing efforts, presentation of resultant test performance inclusive of identified errors or issues (by priority), impact areas and overall testing results to the State otherwise referred to as “Testing Results”.</p> <p>This Service Level begins upon Contractor presentation of the aforementioned Testing Results to the State prior to the State conducting UAT. The initial service level shown for this SLA will be 90.0%, exclusive of Critical and High defects (which must be resolved prior to presentation to the State) and will be validated during an initial measurement period. The initial and subsequent measurement periods will be as mutually agreed by the Parties. Following the initial measurement period, and as a result of any production use the Service Level will be adjusted to 95%.</p> <p>Compliance with the System Test Execution Exit Quality Rate is expected to be greater than or equal to 90% prior to UAT and greater than or equal to 95% in production</p> <p>This SLA is calculated as follows: “System Test Quality/Exit Rate” equals “Total Test Cases Passing Contractor System Test Efforts” divided by “Total Executed during System Testing Effort”</p>	<p>Monthly Fee At Risk</p>	<p>Project Schedule</p>

<p>Mean Time to Repair/Resolve Critical Service Level</p>	<p>The <u>Mean Time to Repair/Resolve Critical Service Level</u> will be calculated by determining time (stated in hours and minutes) representing the statistical mean for all in-scope Critical Defect service requests in the Contract Month. “Time to Repair” is measured from time a Defect is received by the Contractor to point in time when the Defect is resolved by the Contractor and the Contractor submits the repair to the State for confirmation of resolution. “Critical Defect Service Request” affects critical functionality or critical data. No work-around exists.</p> <p>* In lieu of any specifically stated SLA determined by the project sponsor, the default requirement shall apply.</p> <p>Mean Time to Repair/Resolve pre-implementation Critical Defects is expected to be less than or equal to 24 hours*</p> <p>Mean Time to Repair/Resolve post-implementation Critical Defects is expected to be less than or equal to 24 hours</p> <p>This SLA is calculated as follows: “Mean Time to Repair/Resolve (Critical Defects)” equals “Total elapsed time it takes to repair Critical Defect Service Requests” divided by “Total Critical Defect Service Requests”</p>	<p>Monthly Fee At Risk</p>	<p>Project Schedule</p>
<p>Mean Time to Repair/Resolve High Service Level</p>	<p>The <u>Mean Time to Repair/Resolve High Service Level</u> will be calculated by determining time (stated in hours and minutes) representing the statistical mean for all in-scope High Defect service requests in the Contract Month. “Time to Repair” is measured from time a Defect is received by the Contractor to point in time when the Defect is resolved by the Contractor and the Contractor submits the repair to the State for confirmation of resolution. “High Defect Service Request” affects critical functionality, but there is a temporary work-around however it is difficult to implement.</p> <p>Mean Time to Repair/Resolve pre-implementation High Defects is expected to be less than or equal to 72 hours</p> <p>Mean Time to Repair/Resolve post-implementation High Defects is expected to be less than or equal to 72 hours</p> <p>This SLA is calculated as follows: “Mean Time to Repair/Resolve (High Defects)” equals “Total elapsed time it takes to repair High Defect Service Requests” divided by “Total High Defect Service Requests”</p>	<p>Monthly Fee At Risk</p>	<p>Project Schedule</p>

<p>Mean Time to Repair Medium Service Level</p>	<p>The Mean Time to Repair Medium Service Level will be calculated by determining time (stated in hours and minutes) representing the statistical mean for all in-scope Medium Defect service requests in the Contract Month. “Time to Repair” is measured from time a Defect is received by the Contractor to point in time when the Defect is resolved by the Contractor and the Contractor submits the repair to the State for confirmation of resolution. “Medium Defect Service Request” affects minor functionality or non-critical data. There is an easy, temporary work-around.</p> <p>Mean Time to Repair/Resolve pre-implementation Medium Defects is expected to be less than or equal to 7 calendar days</p> <p>Mean Time to Repair/Resolve post-implementation Medium Defects is expected to be less than or equal to 7 calendar days</p> <p>This SLA is calculated as follows: “Mean Time to Repair/Resolve (Medium Defects)” equals “Total elapsed time it takes to repair medium Defect Service Requests” divided by “Total Medium Defect Service Requests”</p>	<p>Monthly Fee At Risk</p>	<p>Project Schedule</p>
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4.5 State Staffing Plan

Staff/Stakeholder Name	Project Role	Percent Allocated
Bright Thomas	Enterprise Architect	As needed
Brian Brothers	Infrastructure Manager	As needed
Sri Parchuri	DODD Technical Lead	As needed
Venkat Sappidi	DODD Technical Lead	As needed
Clay Weidner	DODD Fiscal SME	As needed
Bill Cahill	Manager, PMO	As needed
Matt Curren	Manager, Application Development	As needed
Deval Parikh	Manager, Databases, Business Intelligence/Data Warehouse	As needed

Section 5: SOW Response Submission Requirements

5.1 Response Format, Content Requirements

An identifiable tab sheet must precede each section of a Proposal, and each Proposal must follow the format outlined below. All pages, except pre-printed technical inserts, must be sequentially numbered.

Each Proposal must contain the following:

- Cover Letter
- Pre-Qualified Contractor Qualifications Summary
- Subcontractors Documentation
- Assumptions
- Payment Address
- Staffing plan, personnel resumes, time commitment, organizational chart
- Contingency Plan
- Project Plan
- Project Schedule (WBS using MS Project or compatible)
- Communication Plan
- Risk Management Plan
- Quality Management Plan
- Rate Card

1. Cover Letter:

- a. Must be in the form of a standard business letter;
- b. Must be signed by an individual authorized to legally bind the Contractor;
- c. Must include a statement regarding the Contractor's legal structure (e.g. an Ohio corporation), Federal tax identification number, and principal place of business; please list any Ohio locations or branches;
- d. Must include a list of the people who prepared the Proposal, including their titles; and
- e. Must include the name, address, e-mail, phone number, and fax number of a contact person who has the authority to answer questions regarding the Proposal.

2. Pre-Qualified Contractor Qualifications Summary:

- a. Must include an executive summary of the services the Contractor proposes to provide and three representative references of previously completed projects that demonstrate knowledge and execution of the required technologies and methodologies required in this project (e.g. description of similar projects completed utilizing Business Analysis, information technology application development integration with MVC5, C#, and SQL Server)
- b. Must describe the Contractor's experience, capability, and capacity to complete the application development services required. Provide specific detailed information demonstrating experience similar in nature to the type of work described in this SOW for each of the resources identified in Section 5.2.

3. Subcontractor Documentation:

- a. For each proposed Subcontractor, the Contractor must attach a letter from the Subcontractor, signed by someone authorized to legally bind the Subcontractor, with the following included in the letter:

- i. The Subcontractor’s legal status, federal tax identification number, D-U-N-S number if applicable, and principal place of business address;
- ii. The name, phone number, fax number, email address, and mailing address of a person who is authorized to legally bind the Subcontractor to contractual obligations;
- iii. Must include a brief executive summary of the services the Subcontractor proposes to provide and three representative references of previously completed projects that demonstrate knowledge and execution of the required technologies and methodologies required in this project (e.g. description of similar projects completed utilizing Business Analysis, information technology application development with MVC5, C#, and SQL Server)
- iv. Must describe the Subcontractor’s experience, capability, and capacity to complete the application development services required. Provide specific detailed information demonstrating experience similar in nature to the type of work described in this SOW from each of the resources identified in Section 5.2;
- v. Must include an executive summary of the services the Subcontractor proposes to provide and three representative references of previously completed projects that demonstrate knowledge and execution of the required technologies and methodologies in application integration.
- vi. A commitment to do the work if the Subcontractor is selected; and
- vii. A statement that the Subcontractor has read and understood the RFP and will comply with the requirements of the RFP.

4. Assumptions:

The Contractor must list all assumptions the Contractor made in preparing the Proposal. If any assumption is unacceptable to the State, the State may at its sole discretion request that the Contractor remove the assumption or choose to reject the Proposal. No assumptions may be included regarding the outcomes of negotiation, terms and conditions, or requirements. Assumptions should be provided as part of the Contractor response as a stand-alone response section that is inclusive of all assumptions with reference(s) to the section(s) of the SOW that the assumption is applicable to. The Contractor should not include assumptions elsewhere in their response.

5. Payment Address:

The Contractor must give the address to which the State should send payments under the Contract.

5.2 Staffing plan, personnel resumes, time commitment, organizational chart

Identify Contractor and sub-contractor staff and time commitment. Identify hourly rates for personnel, as applicable. Include Contractor and sub-contractor resumes for each resource identified and organizational chart for entire team.

Staffing plan shows individual skills in SQL Development, 5 years project management, C# and MVC5.

Contractor Name	Role	Contractor or Sub-contractor?	No. Hours	Hourly Rate

<p>5.3 Contingency Plan</p> <p>Identify and provide a Contingency Plan should the Contractor and Sub-Contractor staff fail to meet the Project Schedule, Project Milestones or fail to complete the deliverables according to schedule. Include alternative strategies to be used to ensure project success if specified risk events occur.</p>				
<p>5.4 Project Plan</p> <p>Identify and describe the plan to produce effective documents and complete the deliverable requirements. Describe the primary tasks, how long each task will take, and when each task will be completed in order to meet the final deadline.</p>				
<p>5.5 Project Schedule (WBS using MS Project or compatible)</p> <p>Describe the Project Schedule including planning, defining goals, including milestones, and time for writing, editing and revising. Using MS Project or compatible, create a deliverable-oriented grouping of project elements that organizes and defines the total work scope of the project with each descending level representing an increasingly detailed definition of the project work.</p>				
<p>5.6 Communication Plan</p> <p>Strong listening skills, the ability to ask appropriate questions, and follow-up questions will be required to capture the information necessary to complete the deliverable requirements. Describe the methods to be used to gather and store various types of information and to disseminate the information, updates, and corrections to previously distributed material. Identify to whom the information will flow and what methods will be used for the distribution. Include format, content, level of detail, and conventions to be used. Provide methods for accessing information between scheduled communications.</p>				
<p>5.7 Risk Management Plan</p> <p>Describe the Risk Management Plan requirements including the risk factors, associated risks, and assessment of the likelihood of occurrence and the consequences for each risk. Describe your plan for managing selected risks and plan for keeping people informed about those risks throughout the project.</p>				
<p>5.8 Quality Management Plan</p> <p>Describe your quality policies, procedures, and standards relevant to the project for both project deliverables and project processes. Define who is responsible for the quality of the delivered application enhancements.</p>				
<p>5.9 Fee Structure including Estimated Work Effort for each Deliverable</p> <p>The Contract award will be for a not to exceed fixed price.</p> <p>Payment will be scheduled upon approval & acceptance of milestones and deliverable described below.</p> <p>Payment of 20% of the total not-to-exceed fixed price of all deliverables will be paid upon acceptance of ALL the following deliverables:</p> <ul style="list-style-type: none"> • Project Plan 				

- Finalized Functional and Business Requirements Document for CTP
- Functional Design and Technical Design Documents
- Test Plan

Payment of 20% of the total not-to-exceed fixed price of all deliverables will be paid upon acceptance of **ALL** the following deliverables:

- Test Plan Results
- Working Code

Payment of 15% of the total not-to-exceed fixed price of all deliverables will be paid upon acceptance of **ALL the** following deliverables:

- User Manual
- Technical Documentation

Final payment of the remaining 45% of the total not-to-exceed fixed price of all deliverables will be paid at the Project sign off and completion. Contractor agrees no invoice will be generated until all deliverables are accepted by product owners Kim Mowry, Deputy Director DODD Fiscal and Michelle Burk, Deputy Director DODD Information Technology Services

Deliverable Name	Total Estimated Work Effort (Hours)	Not-to-Exceed Fixed Price for Deliverable
Project Plan for the County Board Cost Report Application		
Finalized Functional and Business Requirements Document for County Board Cost Report application		
Functional Design and Technical Design Documents		
Test Plan		
Working Code		
User Manual and Technical Documentation		
TOTAL COST FOR PROJECT		

5.10 Rate Card

Describe submission and format requirements for Pre-Qualified Contractors to submit a Rate Card, as applicable. The primary purpose of obtaining this Rate Card information is to establish baseline hourly rates in the event that change orders are necessary. The DBITS contract is not intended to be used for hourly based time and materials work. (NOTE – Section 5.2 collects rate information for named resources)

Pre-Qualified Contractors must submit a Rate Card that includes hourly rates for all services the Contractor offers, including but not limited to those listed in Section 5.2. Enter the Rate Card information in this section.

Section 6: SOW Evaluation Criteria

Mandatory Requirements; Accept/Reject

- Pre-qualified Contractor or Subcontractor cover letter(s) included in Section 5.1
- Pre-qualified Contractor or Subcontractor(s) submitted properly formatted proposal by submission deadline

Scored Criteria	Weight	Does Not Meet	Meet	Exceeds
6.1 Contractor or Subcontractor Summary show(s) company experience in information technology application development utilizing: <ul style="list-style-type: none"> • Microsoft C# • Microsoft SQL Server • MVC3 Architecture or higher 	3	0	5	7
6.2 Contractor or Subcontractor Documentation shows resource(s) identified in Section 5.2 experience in information technology application development utilizing: <ul style="list-style-type: none"> • Microsoft C# • Microsoft SQL Server • MVC3 Architecture or higher 	10	0	5	7
6.3 Contractor or Subcontractor Summary must describe how they meet the following skills through described implemented examples of work performed. <ul style="list-style-type: none"> • Business Analysis • Successful completion of C# application coding • SQL Database development 	3	0	5	7
6.4 Contractor must demonstrate understanding of the requirements detailed in the SOW and the ability to successfully complete and implement them.	3	0	5	7
6.5 Pre-qualified Contractor(s) staffing plan shows 5 years project management experience with application development.	4	0	5	7
6.6 Pre-qualified Contractor(s) staffing plan shows individual application development and programming language skills in C#.	6	0	5	7
6.7 Pre-qualified Contractor(s) staffing plan shows individual skills in SQL database development.	6	0	5	7
6.8 Pre-qualified Contractor(s) contingency plan	5	0	5	7
6.9 Contractor must demonstrate ability to complete the project in the available timeline based on the proposed project plan.	5	0	5	7

6.10 Pre-qualified Contractor(s) communication plan.	2	0	5	7
6.11 Pre-qualified Contractor(s) risk management plan	2	0	5	7
6.12 Pre-qualified Contractor(s) quality management plan	4	0	5	7

Price Performance Formula. The evaluation team will rate the Proposals that meet the Mandatory Requirements based on the following criteria and respective weights.

Criteria	Percentage
Technical Proposal	70%
Cost Summary	30%

To ensure the scoring ratio is maintained, the State will use the following formulas to adjust the points awarded to each offeror.

The offeror with the highest point total for the Technical Proposal will receive 700 points. The remaining offerors will receive a percentage of the maximum points available based upon the following formula:

Technical Proposal Points = (Offeror's Technical Proposal Points/Highest Number of Technical Proposal Points Obtained) x 700

The offeror with the lowest proposed total cost for evaluation purposes will receive 300 points. The remaining offerors will receive a percentage of the maximum cost points available based upon the following formula:

Cost Summary Points = (Lowest Total Cost for Evaluation Purposes/Offeror's Total Cost for Evaluation Purposes) x 300

Total Points Score: The total points score is calculated using the following formula:

Total Points = Technical Proposal Points + Cost Summary Points

Section 7: SOW Solicitation Calendar of Events

Firm Dates

SOW Solicitation Released to Pre-qualified Contractors	APRIL 18, 2016
Inquiry Period Begins	APRIL 18, 2016
Inquiry Period Ends	APRIL 27, 2016
Proposal Response Due Date	MAY 2, 2016 1:00 PM

Anticipated Dates

Estimated Date for Selection of Awarded Contractor	MAY 9, 2016
Estimated Commencement Date of Work	MAY 23, 2016

All times listed are Eastern Standard Time (EDT).

Section 8: Inquiry Process

Pre-Qualified Contractors may make inquiries regarding this SOW Solicitation anytime during the inquiry period listed in the Calendar of Events. To make an inquiry, Pre-Qualified Contractors must use the following process:

- Access the State’s Procurement Website at <http://procure.ohio.gov/>;
- From the Quick Links bar on the right, select “Bid Opportunities Search”;
- Enter the DBITS Solicitation ID number found on the first page of this SOW Solicitation;
- Click the “Search” button;
- In the Other section, click the “Submit Inquiry” button;
- On the document inquiry page, complete the required “Personal Information” section by providing:
 - First and last name of the Pre-Qualified Contractor’s representative who is responsible for the inquiry,
 - Name of the Pre-Qualified Contractor,
 - Representative’s business phone number, and
 - Representative’s email address;
- Type the inquiry in the space provided including:
 - A reference to the relevant part of this SOW Solicitation,
 - The heading for the provision under question, and
 - The page number of the SOW Solicitation where the provision can be found; and
- Type the Security Number seen on the right into the Confirmation Number; and
- Click the “Submit” button.

A Pre-Qualified Contractor submitting an inquiry will receive an acknowledgement that the State has received the inquiry as well as an email acknowledging receipt. The Pre-Qualified Contractor will not receive a personalized response to the question nor notification when the State has answered the question.

Pre-Qualified Contractors may view inquiries and responses on the State’s Procurement Website by using the “Find It Fast” feature described above and by clicking the “View Q & A” button on the document information page.

The State usually responds to all inquiries within three business days of receipt, excluding weekends and State holidays. But the State will not respond to any inquiries received after 8:00 a.m. on the inquiry end date.

The State does not consider questions asked during the inquiry period through the inquiry process as exceptions to the terms and conditions of this RFP.

Section 9: Submission Instructions & Location

Each Pre-Qualified Contractor must submit six (6) complete, sealed and signed copies of its Proposal Response and each submission must be clearly marked “**CONFIDENTIAL – Ohio DODD SOW DBITS SOLICITATION ID NO. DBDMR-16-03-001**” on the outside of its package along with Pre-Qualified Contractor’s name.

A single electronic copy of the complete Proposal Response must also be submitted with the printed Proposal Responses. Electronic submissions should be on a CD, DVD or USB memory stick.

Each proposal must be organized in the same format as described in Section 5. Any material deviation from the format outlined in Section 5 may result in a rejection of the non-conforming proposal. Each proposal must contain an identifiable tab sheet preceding each section of the proposal. Proposal Response should be good for a minimum of 60 days.

The State will not be liable for any costs incurred by any Pre-Qualified Contractor in responding to this SOW Solicitation, even if the State does not award a contract through this process. The State may decide not to award a contract at the State's discretion. The State may reject late submissions regardless of the cause for the delay. The State may also reject any submissions that it believes is not in its interest to accept and may decide not to do business with any of the Pre-Qualified Contractors responding to this SOW Solicitation.

As noted in section 7 Submission calendar of events DODD requires Proposals be submitted by **May 2, 2016 at 1:00P.M. EDT**. No responses will be accepted after this date and time.

Proposal Responses **MUST** be submitted to the State Agency's Procurement Representative:

Kim Lewis
Ohio Department of Developmental Disabilities
Division of Information Technology Systems (ITS)
30 East Broad Street
12th floor Rhodes Office Tower
Columbus, OH 43215

Proprietary information

All Proposal Responses and other material submitted will become the property of the State and may be returned only at the State's option. Proprietary information should not be included in a Proposal Response or supporting materials because the State will have the right to use any materials or ideas submitted in any quotation without compensation to the Pre-Qualified Contractor. Additionally, all Proposal Response submissions will be open to the public after the contract has been awarded.

The State may reject any Proposal if the Pre-Qualified Contractor takes exception to the terms and conditions of the Contract.

Waiver of Defects

The State has the right to waive any defects in any quotation or in the submission process followed by a Pre-Qualified Contractor. But the State will only do so if it believes that is in the State's interest and will not cause any material unfairness to other Pre-Qualified Contractors.

Rejection of Submissions

The State may reject any submissions that is not in the required format, does not address all the requirements of this SOW Solicitation, or that the State believes is excessive in price or otherwise not in its interest to consider or to accept. The State will reject any responses from companies not pre-qualified in the Technology Category associated with this SOW Solicitation. In addition, the State may cancel this SOW Solicitation, reject all the submissions, and seek to do the work through a new SOW Solicitation or other means.

Section 10: Limitation of Liability

(Identification of Limitation of Liability applicable to the specific SOW Solicitation. Unless otherwise stated in this section of the SOW Solicitation, the Limitation of Liability will be as described in Attachment Four, Part Four of the Contract General Terms and Conditions.

SOW Solicitation Attachments

Attachment Number	Attachment Name/Title
APPENDIX A	DODD .NET Development Standards
APPENDIX B	DODD Secure Entitlements Management System
APPENDIX C	Sample CB cost reports (Excel Spreadsheet) and guide to preparing income
APPENDIX D	County Board Cost Report Roles
APPENDIX E	County Board Cost Report Workflow
APPENDIX F	CB-DODD Pre-Audit workflow
APPENDIX G	CBCR User Story Builder (user stories)
SUPPLEMENT 1	Security Supplement

Appendix A

DODD .NET Development Standards

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Class Library Design

Naming Guidelines

- √ **DO** use PascalCasing for all public member, type, and namespace names consisting of multiple words.
- √ **DO** use camelCasing for parameter names.

Identifier	Casing	Example
Namespace	Pascal	<code>namespace System.Security { ... }</code>
Type	Pascal	<code>public class StreamReader { ... }</code>
Interface	Pascal	<code>public interface IEnumerable { ... }</code>
Method	Pascal	<code>public class Object { public virtual string ToString(); }</code>
Property	Pascal	<code>public class String { public int Length { get; } }</code>

Event	Pascal	<pre>public class Process { public event EventHandler Exited; }</pre>
Field	Pascal	<pre>public class MessageQueue { public static readonly TimeSpan InfiniteTimeout; } public struct UInt32 { public const Min = 0; }</pre>
Enum value	Pascal	<pre>public enum FileMode { Append, ... }</pre>
Parameter	Camel	<pre>public class Convert { public static int ToInt32(string value); }</pre>

Capitalizing Compound Words and common terms

X DO NOT capitalizes each word in so-called closed-form compound words.

Word Choice

- ✓ **DO** choose easily readable identifier names. For example, a property named **HorizontalAlignment** is more English-readable than **AlignmentHorizontal**.
- ✓ **DO** favor readability over brevity. The property name **CanScrollHorizontally** is better than **ScrollableX** (an obscure reference to the X-axis).
- X DO NOT** use underscores, hyphens, or any other nonalphanumeric characters.
- X AVOID** using identifiers that conflict with keywords of widely used programming languages.

Using Abbreviations and Acronyms

- X DO NOT** use abbreviations or contractions as part of identifier names. For example, use **GetWindow** rather than **GetWin**.
- X DO NOT** use any acronyms that are not widely accepted, **and** even if they are, only when necessary.

Avoiding Language-Specific Names

- ✓ **DO** use semantically interesting names rather than language-specific keywords for type names. For example, **GetLength** is a better name than **GetInt**.
- ✓ **DO** use a generic CLR type name, rather than a language-specific name, in the rare cases when an identifier has no semantic meaning beyond its type.

For example, a method converting to Int64 should be named ToInt64, not ToLong (because Int64 is a CLR name for the C#-specific alias long). The following table presents several base data types using the CLR type names (as well as the corresponding type names for C#, Visual Basic, and C++).

C#	Visual Basic	CLR
sbyte	SByte	SByte
byte	Byte	Byte
short	Short	Int16
ushort	UInt16	UInt16
int	Integer	Int32
uint	UInt32	UInt32
long	Long	Int64
ulong	UInt64	UInt64
float	Single	Single
double	Double	Double
bool	Boolean	Boolean
char	Char	Char
string	String	String
object	Object	Object

✓ **DO** use a common name, such as value or item, rather than repeating the type name, in the rare cases when an identifier has no semantic meaning and the type of the parameter is not important.

Naming New Versions of Existing APIs

✓ **DO** use a name similar to the old API when creating new versions of an existing API.

This helps to highlight the relationship between the APIs.

✓ **DO** prefer adding a suffix rather than a prefix to indicate a new version of an existing API.

This will assist discovery when browsing documentation, or using Intellisense. The old version of the API will be organized close to the new APIs, because most browsers and Intellisense show identifiers in alphabetical order.

✓ **CONSIDER** using a brand new, but meaningful identifier, instead of adding a suffix or a prefix.

✓ **DO** use a numeric suffix to indicate a new version of an existing API, particularly if the existing name of the API is the only name that makes sense (i.e., if it is an industry standard) and if adding any meaningful suffix (or changing the name) is not an appropriate option.

X DO NOT use the "Ex" (or a similar) suffix for an identifier to distinguish it from an earlier version of the same API.

✓ **DO use** the "64" suffix when introducing versions of APIs that operate on a 64-bit integer (a long integer) instead of a 32-bit integer. You only need to take this approach when the existing 32-bit API exists; don't do it for brand new APIs with only a 64-bit version.

Names of Assemblies and DLLs

An assembly is the unit of deployment and identity for managed code programs. Although assemblies can span one or more files, typically an assembly maps one-to-one with a DLL. Therefore, this section describes only DLL naming conventions, which then can be mapped to assembly naming conventions.

✓ **DO** choose names for your assembly DLLs that suggest large chunks of functionality, such as System.Data. Assembly and DLL names don't have to correspond to namespace names, but it is reasonable to follow the namespace name when naming assemblies. A good rule of thumb is to name the DLL based on the common prefix of the assemblies contained in the assembly. For example, an assembly with two namespaces, **DODD.MyTechnology.FirstFeature** and **DODD.MyTechnology.SecondFeature**, could be called **DODD.MyTechnology.dll**.

✓ **CONSIDER** naming DLLs according to the following pattern:

<Company>.<Component>.dll

where <Component> contains one or more dot-separated clauses. For example:

DODD.UserControls.dll

Names of Namespaces

As with other naming guidelines, the goal when naming namespaces is creating sufficient clarity for the programmer using the framework to immediately know what the content of the namespace is likely to be. The following template specifies the general rule for naming namespaces:

<Company>.<Product>|<Technology>|<Feature>|<Subnamespace>

The following are examples:

Fabrikam.Math

Litware.Security

✓ **DO** prefix namespace names with a company name to prevent namespaces from different companies from having the same name.

✓ **DO** use a stable, version-independent product name at the second level of a namespace name.

X DO NOT use organizational hierarchies as the basis for names in namespace hierarchies, because group names within corporations tend to be short-lived. Organize the hierarchy of namespaces around groups of related technologies.

✓ **DO** use PascalCasing, and separate namespace components with periods (e.g., Microsoft.Office.PowerPoint). If your brand employs nontraditional casing, you should follow the casing defined by your brand, even if it deviates from normal namespace casing.

✓ **CONSIDER** using plural namespace names where appropriate.

For example, use System.Collections instead of System.Collection. Brand names and acronyms are exceptions to this rule, however. For example, use System.IO instead of System.IOs.

X DO NOT use the same name for a namespace and a type in that namespace.

For example, do not use Debug as a namespace name and then also provide a class named Debug in the same namespace. Several compilers require such types to be fully qualified.

Namespaces and Type Name Conflicts

X DO NOT introduce generic type names such as Element, Node, Log, and Message.

There is a very high probability that doing so will lead to type name conflicts in common scenarios. You should qualify the generic type names (FormElement, XmlNode, EventLog, SoapMessage).

There are specific guidelines for avoiding type name conflicts for different categories of namespaces.

- **Application model namespaces**

Namespaces belonging to a single application model are very often used together, but they are almost never used with namespaces of other application models. For example, the **System.Windows.Forms** namespace is very rarely used together with the **System.Web.UI** namespace. The following is a list of well-known application model namespace groups:

System.Windows*

System.Web.UI*

X DO NOT give the same name to types in namespaces within a single application model.

For example, do not add a type named Page to the **System.Web.UI.Adapters** namespace, because the **System.Web.UI** namespace already contains a type named Page.

- **Infrastructure namespaces**

This group contains namespaces that are rarely imported during development of common applications. For example, .Design namespaces are mainly used when developing programming tools. Avoiding conflicts with types in these namespaces is not critical.

- **Core namespaces**

Core namespaces include all System namespaces, excluding namespaces of the application models and the Infrastructure namespaces. Core namespaces include, among others, **System**, **System.IO**, **System.Xml**, and **System.Net**.

X DO NOT give types names that would conflict with any type in the Core namespaces.

For **example**, never use Stream as a type name. It would conflict with **System.IO.Stream**, a very commonly used type.

- **Technology namespace groups**

This category includes all namespaces with the same first two namespace nodes (<**Company**>.<**Technology**>*), such as **Microsoft.Build.Utilities** and **Microsoft.Build.Tasks**. It is important that types belonging to a single technology do not conflict with each other.

X DO NOT assign type names that would conflict with other types within a single technology.

X DO NOT introduce type name conflicts between types in technology namespaces and an application model namespace (unless the technology is not intended to be used with the application model).

Names of Classes, Structs, and Interfaces

The naming guidelines that follow apply to general type naming.

✓ **DO** name classes and structs with nouns or noun phrases, using PascalCasing.

This distinguishes type names from methods, which are named with verb phrases.

✓ **DO** name interfaces with adjective phrases, or occasionally with nouns or noun phrases.

Nouns and noun phrases should be used rarely and they might indicate that the type should be an abstract class, and not an interface.

X DO NOT give class names a prefix (e.g., "C").

✓ **CONSIDER** ending the name of derived classes with the name of the base class.

This is very readable and explains the relationship clearly. Some examples of this in code are: **ArgumentOutOfRangeException**, which is a kind of Exception, and **SerializableAttribute**, which is a kind of Attribute. However, it is important to use reasonable judgment in applying this guideline; for example, the Button class is a kind of Control event, although Control doesn't appear in its name.

✓ **DO** prefix interface names with the letter I, to indicate that the type is an interface.

For example, **IComponent (descriptive noun)**, **ICustomAttributeProvider (noun phrase)**, and **IPersistable (adjective)** are appropriate interface names. As with other type names, avoid abbreviations.

✓ **DO** ensure that the names differ only by the "I" prefix on the interface name when you are defining a class–interface pair where the class is a standard implementation of the interface.

Names of Generic Type Parameters

Generics were added to .NET Framework 2.0. The feature introduced a new kind of identifier called type parameter.

✓ **DO** name generic type parameters with descriptive names unless a single-letter name is completely self-explanatory and a descriptive name would not add value.

✓ **CONSIDER** using T as the type parameter name for types with one single-letter type parameter.

```
public int IComparer<T> { ... }
```

```
public delegate bool Predicate<T>(T item);
```

```
public struct Nullable<T> where T:struct { ... }
```

✓ **DO** prefix descriptive type parameter names with T.

```
public interface ISessionChannel<TSession> where TSession : ISession{  
    TSession Session { get; }  
}
```

✓ **CONSIDER** indicating constraints placed on a type parameter in the name of the parameter.

For example, a parameter constrained to ISession might be called TSession.

Names of Type Members

Types are made of members: methods, properties, events, constructors, and fields. The following sections describe guidelines for naming type members.

Names of Methods

Because methods are the means of taking action, the design guidelines require that method names be verbs or verb phrases. Following this guideline also serves to distinguish method names from property and type names, which are noun or adjective phrases.

✓ **DO** give methods names that are verbs or verb phrases.

```
public class String {  
    public int CompareTo(...);  
    public string[] Split(...);  
    public string Trim();  
}
```

Names of Properties

Unlike other members, properties should be given noun phrase or adjective names. That is because a property refers to data, and the name of the property reflects that. PascalCasing is always used for property names.

✓ **DO** name properties using a noun, noun phrase, or adjective.

X DO NOT have properties that match the name of "Get" methods as in the following example:

```
public string TextWriter { get {...} set {...} }  
public string GetTextWriter(int value) { ... }
```

This pattern typically indicates that the property should really be a method.

✓ **DO** name collection properties with a plural phrase describing the items in the collection instead of using a singular phrase followed by "List" or "Collection."

✓ **DO** name Boolean properties with an affirmative phrase (CanSeek instead of CantSeek). Optionally, you can also prefix Boolean properties with "Is," "Can," or "Has," but only where it adds value.

✓ **CONSIDER** giving a property the same name as its type.

For example, the following property correctly gets and sets an enum value named Color, so the property is

named Color:

```
public enum Color {...}
```

```
public class Control {
    public Color Color { get {...} set {...} }
}
```

Names of Events

Events always refer to some action, either one that is happening or one that has occurred. Therefore, as with methods, events are named with verbs, and verb tense is used to indicate the time when the event is raised.

✓ **DO** name events with a verb or a verb phrase.

Examples include Clicked, Painting, DroppedDown, and so on.

✓ **DO** give events names with a concept of before and after, using the present and past tenses.

For example, a close event that is raised before a window is closed would be called Closing, and one that is raised after the window is closed would be called Closed.

X DO NOT use "Before" or "After" prefixes or postfixes to indicate pre- and post-events. Use present and past tenses as just described.

✓ **DO** name event handlers (delegates used as types of events) with the "EventHandler" suffix, as shown in the following example:

```
public delegate void ClickedEventHandler(object sender, ClickedEventArgs e);
```

✓ **DO** use two parameters named sender and e in event handlers.

The sender parameter represents the object that raised the event. The sender parameter is typically of type object, even if it is possible to employ a more specific type.

✓ **DO** name event argument classes with the "EventArgs" suffix.

Names of Fields

The field-naming guidelines apply to static public and protected fields. Internal and private fields are not covered by guidelines, and public or protected instance fields are not allowed by the member design guidelines.

✓ **DO** use PascalCasing in field names.

✓ **DO** name fields using a noun, noun phrase, or adjective.

X DO NOT use a prefix for field names.

For example, do not use "g_" or "s_" to indicate static fields.

Names of Common Types

✓ **DO** follow the guidelines described in the following table when naming types derived from or implementing certain .NET Framework types.

Base Type	Derived/Implementing Type Guideline
System.Attribute	<p>✓ DO add the suffix "Attribute" to names of custom attribute classes. add the suffix "Attribute" to names of custom attribute classes.</p>
System.Delegate	<p>✓ DO add the suffix "EventHandler" to names of delegates that are used in events.</p> <p>✓ DO add the suffix "Callback" to names of delegates other than those used as event handlers.</p> <p>X DO NOT add the suffix "Delegate" to a delegate.</p>

System.EventArgs	✓ DO add the suffix "EventArgs."
System.Enum	X DO NOT derive from this class; use the keyword supported by your language instead; for example, in C#, use the enum keyword. X DO NOT add the suffix "Enum" or "Flag."
System.Exception	✓ DO add the suffix "Exception."
IDictionary IDictionary<TKey,TValue>	✓ DO add the suffix "Dictionary." Note that IDictionary is a specific type of collection, but this guideline takes precedence over the more general collections guideline that follows.
IEnumerable ICollection IList IEnumerable<T> ICollection<T> IList<T>	✓ DO add the suffix "Collection."
System.IO.Stream	✓ DO add the suffix "Stream."
CodeAccessPermission IPermission	✓ DO add the suffix "Permission."

Naming Enumerations

Names of enumeration types (also called enums) in general should follow the standard type-naming rules (PascalCasing, etc.). However, there are additional guidelines that apply specifically to enums.

- ✓ **DO** use a singular type name for an enumeration unless its values are bit fields.
- ✓ **DO** use a plural type name for an enumeration with bit fields as values, also called flags enum.
- X DO NOT** use an "Enum" suffix in enum type names.
- X DO NOT** use "Flag" or "Flags" suffixes in enum type names.
- X DO NOT** use a prefix on enumeration value names (e.g., "ad" for ADO enums, "rtf" for rich text enums, etc.).

Naming Parameters

Beyond the obvious reason of readability, it is important to follow the guidelines for parameter names because parameters are displayed in documentation and in the designer when visual design tools provide Intellisense and class browsing functionality.

- ✓ **DO** use camelCasing in parameter names.
- ✓ **DO** use descriptive parameter names.
- ✓ **CONSIDER** using names based on a parameter’s meaning rather than the parameter’s type.

Naming Operator Overload Parameters

- ✓ **DO** use left and right for binary operator overload parameter names if there is no meaning to the parameters.
- ✓ **DO** use value for unary operator overload parameter names if there is no meaning to the parameters.

- ✓ **CONSIDER** meaningful names for operator overload parameters if doing so adds significant value.
- ✗ **DO NOT** use abbreviations or numeric indices for operator overload parameter names.

Naming Resources

Because localizable resources can be referenced via certain objects as if they were properties, the naming guidelines for resources are similar to property guidelines.

- ✓ **DO** use PascalCasing in resource keys.
- ✓ **DO** provide descriptive rather than short identifiers.
- ✗ **DO NOT** use language-specific keywords of the main CLR languages.
- ✓ **DO** use only alphanumeric characters and underscores in naming resources.
- ✓ **DO** use the following naming convention for exception message resources.

The resource identifier should be the exception type name plus a short identifier of the exception:

ArgumentExceptionIllegalCharacters

ArgumentExceptionInvalidName

ArgumentExceptionFileNameIsMalformed

Type Design Guidelines

Choosing Between Class and Struct

As a rule of thumb, the majority of types in a framework should be classes. There are, however, some situations in which the characteristics of a value type make it more appropriate to use structs.

✓ **CONSIDER** defining a struct instead of a class if instances of the type are small and commonly short-lived or are commonly embedded in other objects.

✗ **AVOID** defining a struct unless the type has all of the following characteristics:

- It logically represents a single value, similar to primitive types (int, double, etc.).
- It has an instance size under 16 bytes.
- It is immutable.
- It will not have to be boxed frequently.

In all other cases, you should define your types as classes.

Abstract Class Design

✗ **DO NOT** define public or protected internal constructors in abstract types.

Constructors should be public only if users will need to create instances of the type. Because you cannot create instances of an abstract type, an abstract type with a public constructor is incorrectly designed and misleading to the users.

✓ **DO** define a protected or an internal constructor in abstract classes.

A protected constructor is more common and simply allows the base class to do its own initialization when subtypes are created.

An internal constructor can be used to limit concrete implementations of the abstract class to the assembly defining the class.

✓ **DO** provide at least one concrete type that inherits from each abstract class that you ship.

Doing this helps to validate the design of the abstract class. For example, **System.IO.FileStream** is an implementation of the **System.IO.Stream** abstract class.

Static Class Design

A static class is defined as a class that contains only static members (of course besides the instance members inherited from **System.Object** and possibly a private constructor). Some languages provide built-in support for static classes. In C# 2.0 and later, when a class is declared to be static, it is sealed, abstract, and no instance members can be overridden or declared.

Static classes are a compromise between pure object-oriented design and simplicity. They are commonly used to provide shortcuts to other operations (such as **System.IO.File**), holders of extension methods, or functionality for which a full object-oriented wrapper is unwarranted (such as **System.Environment**).

✓ **DO** use static classes sparingly.

Static classes should be used only as supporting classes for the object-oriented core of the framework.

X DO NOT treat static classes as a miscellaneous bucket.

X DO NOT declare or override instance members in static classes.

✓ **DO** declare static classes as sealed, abstract, and add a private instance constructor if your programming language does not have built-in support for static classes.

Interface Design

Although most APIs are best modeled using classes and structs, there are cases in which interfaces are more appropriate or are the only option.

The CLR does not support multiple inheritance (i.e., CLR classes cannot inherit from more than one base class), but it does allow types to implement one or more interfaces in addition to inheriting from a base class.

Therefore, interfaces are often used to achieve the effect of multiple inheritance. For example, `IDisposable` is an interface that allows types to support disposability independent of any other inheritance hierarchy in which they want to participate.

The other situation in which defining an interface is appropriate is in creating a common interface that can be supported by several types, including some value types. Value types cannot inherit from types other than `ValueType`, but they can implement interfaces, so using an interface is the only option in order to provide a common base type.

✓ **DO** define an interface if you need some common API to be supported by a set of types that includes value types.

✓ **CONSIDER** defining an interface if you need to support its functionality on types that already inherit from some other type.

X AVOID using marker interfaces (interfaces with no members).

If you need to mark a class as having a specific characteristic (marker), in general, use a custom attribute rather than an interface.

✓ **DO** provide at least one type that is an implementation of an interface.

Doing this helps to validate the design of the interface. For example, `List(Of T)` is an implementation of the `ICollection(Of T)` interface.

✓ **DO** provide at least one API that consumes each interface you define (a method taking the interface as a parameter or a property typed as the interface).

Doing this helps to validate the interface design. For example, `List(Of T).Sort` consumes the `System.Collections.Generic.IComparer(Of T)` interface.

X DO NOT add members to an interface that has previously shipped.

Doing so would break implementations of the interface. You should create a new interface in order to avoid versioning problems.

Except for the situations described in these guidelines, you should, in general, choose classes rather than interfaces in designing managed code reusable libraries.

Struct Design

The general-purpose value type is most often referred to as a struct, its C# keyword. This section provides guidelines for general struct design.

X DO NOT provide a default constructor for a struct.

Following this guideline allows arrays of structs to be created without having to run the constructor on each item of the array. Notice that C# does not allow structs to have default constructors.

X DO NOT define mutable value types.

Mutable value types have several problems. For example, when a property getter returns a value type, the caller receives a copy. Because the copy is created implicitly, developers might not be aware that they are mutating the copy, and not the original value. Also, some languages (dynamic languages, in particular) have problems using mutable value types because even local variables, when dereferenced, cause a copy to be made.

✓ **DO** ensure that a state where all instance data is set to zero, false, or null (as appropriate) is valid.

This prevents accidental creation of invalid instances when an array of the structs is created.

✓ **DO** implement IEquatable(Of T) on value types.

The Object.Equals method on value types causes boxing, and its default implementation is not very efficient, because it uses reflection. Equals can have much better performance and can be implemented so that it will not cause boxing.

X DO NOT explicitly extend ValueType. In fact, most languages prevent this.

In general, structs can be very useful but should only be used for small, single, immutable values that will not be boxed frequently.

Enum Design

Enums are a special kind of value type. There are two kinds of enums: simple enums and flag enums.

Simple enums represent small closed sets of choices. A common example of the simple enum is a set of colors.

Flag enums are designed to support bitwise operations on the enum values. A common example of the flags enum is a list of options.

✓ **DO** use an enum to strongly type parameters, properties, and return values that represent sets of values.

✓ **DO** favor using an enum instead of static constants.

X DO NOT use an enum for open sets (such as the operating system version, names of your friends, etc.).

X DO NOT provide reserved enum values that are intended for future use.

You can always simply add values to the existing enum at a later stage. See Adding Values to Enums for more details on adding values to enums. Reserved values just pollute the set of real values and tend to lead to user errors.

X AVOID publicly exposing enums with only one value.

A common practice for ensuring future extensibility of C APIs is to add reserved parameters to method signatures. Such reserved parameters can be expressed as enums with a single default value. This should not be done in managed APIs. Method overloading allows adding parameters in future releases.

X DO NOT include sentinel values in enums.

Although they are sometimes helpful to framework developers, sentinel values are confusing to users of the framework. They are used to track the state of the enum rather than being one of the values from the set represented by the enum.

✓ **DO** provide a value of zero on simple enums.

Consider calling the value something like "None." If such a value is not appropriate for this particular enum, the most common default value for the enum should be assigned the underlying value of zero.

✓ **CONSIDER** using Int32 (the default in most programming languages) as the underlying type of an enum unless any of the following is true:

- The enum is a flags enum and you have more than 32 flags, or expect to have more in the future.

- The underlying type needs to be different than Int32 for easier interoperability with unmanaged code expecting different-size enums.
- A smaller underlying type would result in substantial savings in space. If you expect the enum to be used mainly as an argument for flow of control, the size makes little difference. The size savings might be significant if:
 - You expect the enum to be used as a field in a very frequently instantiated structure or class.
 - You expect users to create large arrays or collections of the enum instances.
 - You expect a large number of instances of the enum to be serialized.

For in-memory usage, be aware that managed objects are always DWORD-aligned, so you effectively need multiple enums or other small structures in an instance to pack a smaller enum with in order to make a difference, because the total instance size is always going to be rounded up to a DWORD.

✓ **DO** name flag enums with plural nouns or noun phrases and simple enums with singular nouns or noun phrases.

X DO NOT extend System.Enum directly.

System.Enum is a special type used by the CLR to create user-defined enumerations. Most programming languages provide a programming element that gives you access to this functionality. For example, in C# the enum keyword is used to define an enumeration.

Designing Flag Enums

✓ **DO** apply the System.FlagsAttribute to flag enums. Do not apply this attribute to simple enums.

✓ **DO** use powers of two for the flag enum values so they can be freely combined using the bitwise OR operation.

✓ **CONSIDER** providing special enum values for commonly used combinations of flags.

Bitwise operations are an advanced concept and should not be required for simple tasks. ReadWrite is an example of such a special value.

X AVOID creating flag enums where certain combinations of values are invalid.

X AVOID using flag enum values of zero unless the value represents "all flags are cleared" and is named appropriately, as prescribed by the next guideline.

✓ **DO** name the zero value of flag enums None. For a flag enum, the value must always mean "all flags are cleared."

ADDING VALUE TO ENUMS

It is very common to discover that you need to add values to an enum after you have already shipped it. There is a potential application compatibility problem when the newly added value is returned from an existing API, because poorly written applications might not handle the new value correctly.

✓ **CONSIDER** adding values to enums, despite a small compatibility risk.

If you have real data about application incompatibilities caused by additions to an enum, consider adding a new API that returns the new and old values, and deprecate the old API, which should continue returning just the old values. This will ensure that your existing applications remain compatible.

Nested Types

A nested type is a type defined within the scope of another type, which is called the enclosing type. A nested type has access to all members of its enclosing type. For example, it has access to private fields defined in the enclosing type and to protected fields defined in all ascendants of the enclosing type.

In general, nested types should be used sparingly. There are several reasons for this. Some developers are not fully familiar with the concept. These developers might, for example, have problems with the syntax of declaring variables of nested types. Nested types are also very tightly coupled with their enclosing types, and as such are not suited to be general-purpose types.

Nested types are best suited for modeling implementation details of their enclosing types. The end user should rarely have to declare variables of a nested type and almost never should have to explicitly instantiate nested types. For example, the enumerator of a collection can be a nested type of that collection. Enumerators are usually instantiated by their enclosing type, and because many languages support the foreach statement, enumerator variables rarely have to be declared by the end user.

✓ **DO** use nested types when the relationship between the nested type and its outer type is such that member-accessibility semantics are desirable.

X DO NOT use public nested types as a logical grouping construct; use namespaces for this.

X AVOID publicly exposed nested types. The only exception to this is if variables of the nested type need to be declared only in rare scenarios such as subclassing or other advanced customization scenarios.

X DO NOT use nested types if the type is likely to be referenced outside of the containing type.

For example, an enum passed to a method defined on a class should not be defined as a nested type in the class.

X DO NOT use nested types if they need to be instantiated by client code. If a type has a public constructor, it should probably not be nested.

If a type can be instantiated, that seems to indicate the type has a place in the framework on its own (you can create it, work with it, and destroy it without ever using the outer type), and thus should not be nested. Inner types should not be widely reused outside of the outer type without any relationship whatsoever to the outer type.

X DO NOT define a nested type as a member of an interface. Many languages do not support such a construct.

Member Design Guidelines

Methods, properties, events, constructors, and fields are collectively referred to as members. Members are ultimately the means by which framework functionality is exposed to the end users of a framework.

Members can be virtual or nonvirtual, concrete or abstract, static or instance, and can have several different scopes of accessibility. All this variety provides incredible expressiveness but at the same time requires care on the part of the framework designer.

Member Overloading

Member overloading means creating two or more members on the same type that differ only in the number or type of parameters but have the same name. For example, in the following, the WriteLine method is overloaded:

```
public static class Console {
    public void WriteLine();
    public void WriteLine(string value);
    public void WriteLine(bool value);
    ...
}
```

Because only methods, constructors, and indexed properties can have parameters, only those members can be overloaded.

Overloading is one of the most important techniques for improving usability, productivity, and readability of reusable libraries. Overloading on the number of parameters makes it possible to provide simpler versions of constructors and methods. Overloading on the parameter type makes it possible to use the same member name for members performing identical operations on a selected set of different types.

✓ **DO** try to use descriptive parameter names to indicate the default used by shorter overloads.

X AVOID arbitrarily varying parameter names in overloads. If a parameter in one overload represents the same input as a parameter in another overload, the parameters should have the same name.

X AVOID being inconsistent in the ordering of parameters in overloaded members. Parameters with the same name should appear in the same position in all overloads.

✓ **DO** make only the longest overload virtual (if extensibility is required). Shorter overloads should simply call through to a longer overload.

X DO NOT use ref or out modifiers to overload members.

Some languages cannot resolve calls to overloads like this. In addition, such overloads usually have completely different semantics and probably should not be overloads but two separate methods instead.

X DO NOT have overloads with parameters at the same position and similar types yet with different semantics.

✓ **DO** allow null to be passed for optional arguments.

✓ **DO** use member overloading rather than defining members with default arguments.

Default arguments are not CLS compliant.

Property Design

Although properties are technically very similar to methods, they are quite different in terms of their usage scenarios. They should be seen as smart fields. They have the calling syntax of fields, and the flexibility of methods.

✓ **DO** create get-only properties if the caller should not be able to change the value of the property.

Keep in mind that if the type of the property is a mutable reference type, the property value can be changed even if the property is get-only.

X DO NOT provide set-only properties or properties with the setter having broader accessibility than the getter.

For example, do not use properties with a public setter and a protected getter.

If the property getter cannot be provided, implement the functionality as a method instead. Consider starting the method name with Set and follow with what you would have named the property. For example, AppDomain has a method called SetCachePath instead of having a set-only property called CachePath.

✓ **DO** provide sensible default values for all properties, ensuring that the defaults do not result in a security hole or terribly inefficient code.

✓ **DO** allow properties to be set in any order even if this results in a temporary invalid state of the object.

It is common for two or more properties to be interrelated to a point where some values of one property might be invalid given the values of other properties on the same object. In such cases, exceptions resulting from the invalid state should be postponed until the interrelated properties are actually used together by the object.

✓ **DO** preserve the previous value if a property setter throws an exception.

X AVOID throwing exceptions from property getters.

Property getters should be simple operations and should not have any preconditions. If a getter can throw an exception, it should probably be redesigned to be a method. Notice that this rule does not apply to indexers, where we do expect exceptions as a result of validating the arguments.

Indexed Property Design

An indexed property is a special property that can have parameters and can be called with special syntax similar to array indexing.

Indexed properties are commonly referred to as indexers. Indexers should be used only in APIs that provide access to items in a logical collection. For example, a string is a collection of characters, and the indexer on System.String was added to access its characters.

✓ **CONSIDER** using indexers to provide access to data stored in an internal array.

✓ **CONSIDER** providing indexers on types representing collections of items.

X AVOID using indexed properties with more than one parameter.

If the design requires multiple parameters, reconsider whether the property really represents an accessor to a logical collection. If it does not, use methods instead. Consider starting the method name with Get or Set.

X AVOID indexers with parameter types other than System.Int32, System.Int64, System.String, System.Object, or an enum.

If the design requires other types of parameters, strongly reevaluate whether the API really represents an accessor to a logical collection. If it does not, use a method. Consider starting the method name with Get or Set.

✓ **DO** use the name Item for indexed properties unless there is an obviously better name (e.g., see the Chars property on System.String).

In C#, indexers are by default named Item. The IndexerNameAttribute can be used to customize this name.

X DO NOT provide both an indexer and methods that are semantically equivalent.

X DO NOT provide more than one family of overloaded indexers in one type.

This is enforced by the C# compiler.

X DO NOT use nondefault indexed properties.

This is enforced by the C# compiler.

Property Change Notification Events

Sometimes it is useful to provide an event notifying the user of changes in a property value. For example, **System.Windows.Forms.Control** raises a TextChanged event after the value of its Text property has changed.

✓ **CONSIDER** raising change notification events when property values in high-level APIs (usually designer components) are modified.

If there is a good scenario for a user to know when a property of an object is changing, the object should raise a change notification event for the property.

However, it is unlikely to be worth the overhead to raise such events for low-level APIs such as base types or collections. For example, List(Of T) would not raise such events when a new item is added to the list and the Count property changes.

✓ **CONSIDER** raising change notification events when the value of a property changes via external forces.

If a property value changes via some external force (in a way other than by calling methods on the object), raise events indicate to the developer that the value is changing and has changed. A good example is the Text property of a text box control. When the user types text in a TextBox, the property value automatically changes.

Constructor Design

There are two kinds of constructors: type constructors and instance constructors.

Type constructors are static and are run by the CLR before the type is used. Instance constructors run when an instance of a type is created.

Type constructors cannot take any parameters. Instance constructors can. Instance constructors that don't take any parameters are often called default constructors.

Constructors are the most natural way to create instances of a type. Most developers will search and try to use a constructor before they consider alternative ways of creating instances (such as factory methods).

✓ **CONSIDER** providing simple, ideally default, constructors.

A simple constructor has a very small number of parameters, and all parameters are primitives or enums. Such simple constructors increase usability of the framework.

✓ **CONSIDER** using a static factory method instead of a constructor if the semantics of the desired operation do not map directly to the construction of a new instance, or if following the constructor design guidelines feels unnatural.

✓ **DO** use constructor parameters as shortcuts for setting main properties.

There should be no difference in semantics between using the empty constructor followed by some property sets and using a constructor with multiple arguments.

✓ **DO** use the same name for constructor parameters and a property if the constructor parameters are used to simply set the property.

The only difference between such parameters and the properties should be casing.

✓ **DO** minimal work in the constructor.

Constructors should not do much work other than capture the constructor parameters. The cost of any other processing should be delayed until required.

✓ **DO** throw exceptions from instance constructors, if appropriate.

✓ **DO** explicitly declare the public default constructor in classes, if such a constructor is required.

If you don't explicitly declare any constructors on a type, many languages (such as C#) will automatically add a public default constructor. (Abstract classes get a protected constructor.)

Adding a parameterized constructor to a class prevents the compiler from adding the default constructor. This often causes accidental breaking changes.

X AVOID explicitly defining default constructors on structs.

This makes array creation faster, because if the default constructor is not defined, it does not have to be run on every slot in the array. Note that many compilers, including C#, don't allow structs to have parameterless constructors for this reason.

X AVOID calling virtual members on an object inside its constructor.

Calling a virtual member will cause the most derived override to be called, even if the constructor of the most derived type has not been fully run yet.

Type Constructor Guidelines

✓ **DO** make static constructors private.

A static constructor, also called a class constructor, is used to initialize a type. The CLR calls the static constructor before the first instance of the type is created or any static members on that type are called. The user has no control over when the static constructor is called. If a static constructor is not private, it can be called by code other than the CLR. Depending on the operations performed in the constructor, this can cause unexpected behavior. The C# compiler forces static constructors to be private.

X DO NOT throw exceptions from static constructors.

If an exception is thrown from a type constructor, the type is not usable in the current application domain.

✓ **CONSIDER** initializing static fields inline rather than explicitly using static constructors, because the runtime is able to optimize the performance of types that don't have an explicitly defined static constructor.

Event Design

Events are the most commonly used form of callbacks (constructs that allow the framework to call into user code). Other callback mechanisms include members taking delegates, virtual members, and interface-based plug-ins. Data from usability studies indicate that the majority of developers are more comfortable using events than they are using the other callback mechanisms. Events are nicely integrated with Visual Studio and many languages.

It is important to note that there are two groups of events: events raised before a state of the system changes, called pre-events, and events raised after a state changes, called post-events. An example of a pre-event would be `Form.Closing`, which is raised before a form is closed. An example of a post-event would be `Form.Closed`, which is raised after a form is closed.

✓ **DO** use the term "raise" for events rather than "fire" or "trigger."

✓ **DO** use `System.EventHandler(Of TEventArgs)` instead of manually creating new delegates to be used as event handlers.

✓ **CONSIDER** using a subclass of `EventArgs` as the event argument, unless you are absolutely sure the event will never need to carry any data to the event handling method, in which case you can use the `EventArgs` type directly.

If you ship an API using `EventArgs` directly, you will never be able to add any data to be carried with the event without breaking compatibility. If you use a subclass, even if initially completely empty, you will be able to add properties to the subclass when needed.

✓ **DO** use a protected virtual method to raise each event. This is only applicable to nonstatic events on unsealed classes, not to structs, sealed classes, or static events.

The purpose of the method is to provide a way for a derived class to handle the event using an override.

Overriding is a more flexible, faster, and more natural way to handle base class events in derived classes. By convention, the name of the method should start with "On" and be followed with the name of the event.

The derived class can choose not to call the base implementation of the method in its override. Be prepared for this by not including any processing in the method that is required for the base class to work correctly.

✓ **DO** take one parameter to the protected method that raises an event.

The parameter should be named e and should be typed as the event argument class.

X DO NOT pass null as the sender when raising a nonstatic event.

✓ **DO** pass null as the sender when raising a static event.

X DO NOT pass null as the event data parameter when raising an event.

You should pass EventArgs.Empty if you don't want to pass any data to the event handling method. Developers expect this parameter not to be null.

✓ **CONSIDER** raising events that the end user can cancel. This only applies to pre-events.

Use System.ComponentModel.CancelEventArgs or its subclass as the event argument to allow the end user to cancel events.

Custom Event Handler Design

There are cases in which EventHandler<T> cannot be used, such as when the framework needs to work with earlier versions of the CLR, which did not support Generics. In such cases, you might need to design and develop a custom event handler delegate.

✓ **DO** use a return type of void for event handlers.

An event handler can invoke multiple event handling methods, possibly on multiple objects. If event handling methods were allowed to return a value, there would be multiple return values for each event invocation.

✓ **DO** use object as the type of the first parameter of the event handler, and call it sender.

✓ **DO** use EventArgs or its subclass as the type of the second parameter of the event handler, and call it e.

X DO NOT have more than two parameters on event handlers.

Field Design

The principle of encapsulation is one of the most important notions in object-oriented design. This principle states that data stored inside an object should be accessible only to that object.

A useful way to interpret the principle is to say that a type should be designed so that changes to fields of that type (name or type changes) can be made without breaking code other than for members of the type. This interpretation immediately implies that all fields must be private.

We exclude constant and static read-only fields from this strict restriction, because such fields, almost by definition, are never required to change.

X DO NOT provide instance fields that are public or protected.

You should provide properties for accessing fields instead of making them public or protected.

✓ **DO** use constant fields for constants that will never change.

The compiler burns the values of const fields directly into calling code. Therefore, const values can never be changed without the risk of breaking compatibility.

✓ **DO** use public static readonly fields for predefined object instances.

If there are predefined instances of the type, declare them as public read-only static fields of the type itself.

X DO NOT assign instances of mutable types to readonly fields.

A mutable type is a type with instances that can be modified after they are instantiated. For example, arrays, most collections, and streams are mutable types, but System.Int32, System.Uri, and System.String are all immutable. The read-only modifier on a reference type field prevents the instance stored in the field from being

replaced, but it does not prevent the field's instance data from being modified by calling members changing the instance.

Extension Methods

Extension methods are a language feature that allows static methods to be called using instance method call syntax. These methods must take at least one parameter, which represents the instance the method is to operate on.

The class that defines such extension methods is referred to as the "sponsor" class, and it must be declared as static. To use extension methods, one must import the namespace defining the sponsor class.

X AVOID frivolously defining extension methods, especially on types you don't own.

If you do own source code of a type, consider using regular instance methods instead. If you don't own, and you want to add a method, be very careful. Liberal use of extension methods has the potential of cluttering APIs of types that were not designed to have these methods.

✓ **CONSIDER** using extension methods in any of the following scenarios:

- To provide helper functionality relevant to every implementation of an interface, if said functionality can be written in terms of the core interface. This is because concrete implementations cannot otherwise be assigned to interfaces. For example, the LINQ to Objects operators are implemented as extension methods for all `IEnumerable(Of T)` types. Thus, any `IEnumerable<>` implementation is automatically LINQ-enabled.
- When an instance method would introduce a dependency on some type, but such a dependency would break dependency management rules. For example, a dependency from `String` to `System.Uri` is probably not desirable, and so `String.ToUri()` instance method returning `System.Uri` would be the wrong design from a dependency management perspective. A static extension method `Uri.ToUri(this string str)` returning `System.Uri` would be a much better design.

X AVOID defining extension methods on `System.Object`.

VB users will not be able to call such methods on object references using the extension method syntax. VB does not support calling such methods because, in VB, declaring a reference as `Object` forces all method invocations on it to be late bound (actual member called is determined at runtime), while bindings to extension methods are determined at compile-time (early bound).

Note that the guideline applies to other languages where the same binding behavior is present, or where extension methods are not supported.

X DO NOT put extension methods in the same namespace as the extended type unless it is for adding methods to interfaces or for dependency management.

X AVOID defining two or more extension methods with the same signature, even if they reside in different namespaces.

✓ **CONSIDER** defining extension methods in the same namespace as the extended type if the type is an interface and if the extension methods are meant to be used in most or all cases.

X DO NOT define extension methods implementing a feature in namespaces normally associated with other features. Instead, define them in the namespace associated with the feature they belong to.

X AVOID generic naming of namespaces dedicated to extension methods (e.g., "Extensions"). Use a descriptive name (e.g., "Routing") instead.

Operator Overloads

Operator overloads allow framework types to appear as if they were built-in language primitives.

Although allowed and useful in some situations, operator overloads should be used cautiously. There are many cases in which operator overloading has been abused, such as when framework designers started to use

operators for operations that should be simple methods. The following guidelines should help you decide when and how to use operator overloading.

X AVOID defining operator overloads, except in types that should feel like primitive (built-in) types.

✓ CONSIDER defining operator overloads in a type that should feel like a primitive type.

For example, System.String has operator== and operator!= defined.

✓ DO define operator overloads in structs that represent numbers (such as System.Decimal).

X DO NOT be cute when defining operator overloads.

Operator overloading is useful in cases in which it is immediately obvious what the result of the operation will be. For example, it makes sense to be able to subtract one DateTime from another DateTime and get a TimeSpan. However, it is not appropriate to use the logical union operator to union two database queries, or to use the shift operator to write to a stream.

X DO NOT provide operator overloads unless at least one of the operands is of the type defining the overload.

✓ DO overload operators in a symmetric fashion.

For example, if you overload the operator==, you should also overload the operator!=. Similarly, if you overload the operator<, you should also overload the operator>, and so on.

✓ CONSIDER providing methods with friendly names that correspond to each overloaded operator.

Many languages do not support operator overloading. For this reason, it is recommended that types that overload operators include a secondary method with an appropriate domain-specific name that provides equivalent functionality.

The following table contains a list of operators and the corresponding friendly method names.

C# Operator Symbol	Metadata Name	Friendly Name
N/A	op_Implicit	To<TypeName>/From<TypeName>
N/A	op_Explicit	To<TypeName>/From<TypeName>
+ (binary)	op_Addition	Add
- (binary)	op_Subtraction	Subtract
* (binary)	op_Multiply	Multiply
/	op_Division	Divide
%	op_Modulus	Mod or Remainder
^	op_ExclusiveOr	Xor
& (binary)	op_BitwiseAnd	BitwiseAnd
	op_BitwiseOr	BitwiseOr
&&	op_LogicalAnd	And
	op_LogicalOr	Or

=	op_Assign	Assign
<<	op_LeftShift	LeftShift
>>	op_RightShift	RightShift
N/A	op_SignedRightShift	SignedRightShift
N/A	op_UnsignedRightShift	UnsignedRightShift
==	op_Equality	Equals
!=	op_Inequality	Equals
>	op_GreaterThan	CompareTo
<	op_LessThan	CompareTo
>=	op_GreaterThanOrEqualTo	CompareTo
<=	op_LessThanOrEqualTo	CompareTo
*=	op_MultiplicationAssignment	Multiply
-=	op_SubtractionAssignment	Subtract
^=	op_ExclusiveOrAssignment	Xor
<<=	op_LeftShiftAssignment	LeftShift
%=	op_ModulusAssignment	Mod
+=	op_AdditionAssignment	Add
&=	op_BitwiseAndAssignment	BitwiseAnd
=	op_BitwiseOrAssignment	BitwiseOr

,	op_Comma	Comma
/=	op_DivisionAssignment	Divide
--	op_Decrement	Decrement
++	op_Increment	Increment
- (unary)	op_UnaryNegation	Negate
+ (unary)	op_UnaryPlus	Plus
~	op_OnesComplement	OnesComplement

Overloading Operator ==

Overloading operator == is quite complicated. The semantics of the operator need to be compatible with several other members, such as Object.Equals.

Conversion Operators

Conversion operators are unary operators that allow conversion from one type to another. The operators must be defined as static members on either the operand or the return type. There are two types of conversion operators: implicit and explicit.

X DO NOT provide a conversion operator if such conversion is not clearly expected by the end users.

X DO NOT define conversion operators outside of a type's domain.

For example, Int32, Double, and Decimal are all numeric types, whereas DateTime is not. Therefore, there should be no conversion operator to convert a Double(long) to a DateTime. A constructor is preferred in such a case.

X DO NOT provide an implicit conversion operator if the conversion is potentially lossy.

For example, there should not be an implicit conversion from Double to Int32 because Double has a wider range than Int32. An explicit conversion operator can be provided even if the conversion is potentially lossy.

X DO NOT throw exceptions from implicit casts.

It is very difficult for end users to understand what is happening, because they might not be aware that a conversion is taking place.

✓ **DO** throw System.InvalidCastException if a call to a cast operator results in a lossy conversion and the contract of the operator does not allow lossy conversions.

Parameter Design

This section provides broad guidelines on parameter design, including sections with guidelines for checking arguments. In addition, you should refer to the guidelines described in Naming Parameters.

✓ **DO** use the least derived parameter type that provides the functionality required by the member.

For example, suppose you want to design a method that enumerates a collection and prints each item to the console. Such a method should take IEnumerable as the parameter, not ArrayList or IList, for example.

X DO NOT use reserved parameters.

If more input to a member is needed in some future version, a new overload can be added.

X DO NOT have publicly exposed methods that take pointers, arrays of pointers, or multidimensional arrays as parameters.

Pointers and multidimensional arrays are relatively difficult to use properly. In almost all cases, APIs can be redesigned to avoid taking these types as parameters.

✓ **DO** place all out parameters following all of the by-value and ref parameters (excluding parameter arrays), even if it results in an inconsistency in parameter ordering between overloads (see Member Overloading). The out parameters can be seen as extra return values, and grouping them together makes the method signature easier to understand.

✓ **DO** be consistent in naming parameters when overriding members or implementing interface members. This better communicates the relationship between the methods.

Choosing Between Enum and Boolean Parameters

✓ **DO** use enums if a member would otherwise have two or more Boolean parameters.

X DO NOT use Booleans unless you are absolutely sure there will never be a need for more than two values.

Enums give you some room for future addition of values, but you should be aware of all the implications of adding values to enums, which are described in Enum Design.

✓ **CONSIDER** using Booleans for constructor parameters that are truly two-state values and are simply used to initialize Boolean properties.

Validating Arguments

✓ **DO** validate arguments passed to public, protected, or explicitly implemented members.

Throw `System.ArgumentException`, or one of its subclasses, if the validation fails.

Note that the actual validation does not necessarily have to happen in the public or protected member itself. It could happen at a lower level in some private or internal routine. The main point is that the entire surface area that is exposed to the end users checks the arguments.

✓ **DO** throw `ArgumentNullException` if a null argument is passed and the member does not support null arguments.

✓ **DO** validate enum parameters.

Do not assume enum arguments will be in the range defined by the enum. The CLR allows casting any integer value into an enum value even if the value is not defined in the enum.

X DO NOT use `Enum.IsDefined` for enum range checks.

✓ **DO** be aware that mutable arguments might have changed after they were validated.

If the member is security sensitive, you are encouraged to make a copy and then validate and process the argument.

Parameter Passing

From the perspective of a framework designer, there are three main groups of parameters: by-value parameters, ref parameters, and out parameters.

When an argument is passed through a by-value parameter, the member receives a copy of the actual argument passed in. If the argument is a value type, a copy of the argument is put on the stack. If the argument is a reference type, a copy of the reference is put on the stack. Most popular CLR languages, such as C#, VB.NET, and C++, default to passing parameters by value.

When an argument is passed through a ref parameter, the member receives a reference to the actual argument passed in. If the argument is a value type, a reference to the argument is put on the stack. If the argument is a reference type, a reference to the reference is put on the stack. Ref parameters can be used to allow the member to modify arguments passed by the caller.

Out parameters are similar to ref parameters, with some small differences. The parameter is initially considered unassigned and cannot be read in the member body before it is assigned some value. Also, the parameter has to be assigned some value before the member returns.

X AVOID using out or ref parameters.

Using out or ref parameters requires experience with pointers, understanding how value types and reference types differ, and handling methods with multiple return values. Also, the difference between out and ref parameters is not widely understood. Framework architects designing for a general audience should not expect users to master working with out or ref parameters.

X DO NOT pass reference types by reference.

There are some limited exceptions to the rule, such as a method that can be used to swap references.

Members with Variable Number of Parameters

Members that can take a variable number of arguments are expressed by providing an array parameter. For example, `String` provides the following method:

```
public class String {  
    public static string Format(string format, object[] parameters);  
}
```

A user can then call the `String.Format` method, as follows:

```
String.Format("File {0} not found in {1}", new object[] {filename, directory});
```

Adding the `C#` `params` keyword to an array parameter changes the parameter to a so-called `params` array parameter and provides a shortcut to creating a temporary array.

```
public class String {  
    public static string Format(string format, params object[] parameters);  
}
```

Doing this allows the user to call the method by passing the array elements directly in the argument list.

```
String.Format("File {0} not found in {1}", filename, directory);
```

Note that the `params` keyword can be added only to the last parameter in the parameter list.

✓ **CONSIDER** adding the `params` keyword to array parameters if you expect the end users to pass arrays with a small number of elements. If it's expected that lots of elements will be passed in common scenarios, users will probably not pass these elements inline anyway, and so the `params` keyword is not necessary.

X AVOID using `params` arrays if the caller would almost always have the input already in an array.

For example, members with byte array parameters would almost never be called by passing individual bytes.

For this reason, byte array parameters in the .NET Framework do not use the `params` keyword.

X DO NOT use `params` arrays if the array is modified by the member taking the `params` array parameter.

Because of the fact that many compilers turn the arguments to the member into a temporary array at the call site, the array might be a temporary object, and therefore any modifications to the array will be lost.

✓ **CONSIDER** using the `params` keyword in a simple overload, even if a more complex overload could not use it.

Ask yourself if users would value having the `params` array in one overload even if it wasn't in all overloads.

✓ **DO** try to order parameters to make it possible to use the `params` keyword.

✓ **CONSIDER** providing special overloads and code paths for calls with a small number of arguments in extremely performance-sensitive APIs.

This makes it possible to avoid creating array objects when the API is called with a small number of arguments.

Form the names of the parameters by taking a singular form of the array parameter and adding a numeric suffix.

You should only do this if you are going to special-case the entire code path, not just create an array and call the more general method.

✓ **DO** be aware that `null` could be passed as a `params` array argument.

You should validate that the array is not `null` before processing.

X DO NOT use the `varargs` methods, otherwise known as the ellipsis.

Some CLR languages, such as C++, support an alternative convention for passing variable parameter lists called `varargs` methods. The convention should not be used in frameworks, because it is not CLS compliant.

Pointer Parameters

In general, pointers should not appear in the public surface area of a well-designed managed code framework. Most of the time, pointers should be encapsulated. However, in some cases pointers are required for interoperability reasons, and using pointers in such cases is appropriate.

✓ **DO** provide an alternative for any member that takes a pointer argument, because pointers are not CLS-compliant.

X AVOID doing expensive argument checking of pointer arguments.

✓ **DO** follow common pointer-related conventions when designing members with pointers.

For example, there is no need to pass the start index, because simple pointer arithmetic can be used to accomplish the same result.

Designing for Extensibility

Unsealed Classes

Sealed classes cannot be inherited from, and they prevent extensibility. In contrast, classes that can be inherited from are called unsealed classes.

✓ **CONSIDER** using unsealed classes with no added virtual or protected members as a great way to provide inexpensive yet much appreciated extensibility to a framework.

Developers often want to inherit from unsealed classes so as to add convenience members such as custom constructors, new methods, or method overloads. For example, `System.Messaging.MessageQueue` is unsealed and thus allows users to create custom queues that default to a particular queue path or to add custom methods that simplify the API for specific scenarios.

Classes are unsealed by default in most programming languages, and this is also the recommended default for most classes in frameworks. The extensibility afforded by unsealed types is much appreciated by framework users and quite inexpensive to provide because of relatively low test costs associated with unsealed types.

Protected Members

Protected members by themselves do not provide any extensibility, but they can make extensibility through subclassing more powerful. They can be used to expose advanced customization options without unnecessarily complicating the main public interface.

Framework designers need to be careful with protected members because the name "protected" can give a false sense of security. Anyone is able to subclass an unsealed class and access protected members, and so all the same defensive coding practices used for public members apply to protected members.

✓ **CONSIDER** using protected members for advanced customization.

✓ **DO** treat protected members in unsealed classes as public for the purpose of security, documentation, and compatibility analysis.

Anyone can inherit from a class and access the protected members.

Events and Callbacks

Callbacks are extensibility points that allow a framework to call back into user code through a delegate. These delegates are usually passed to the framework through a parameter of a method.

Events are a special case of callbacks that supports convenient and consistent syntax for supplying the delegate (an event handler). In addition, Visual Studio's statement completion and designers provide help in using event-based APIs. (See Event Design.)

- ✓ **CONSIDER** using callbacks to allow users to provide custom code to be executed by the framework.
 - ✓ **CONSIDER** using events to allow users to customize the behavior of a framework without the need for understanding object-oriented design.
 - ✓ **DO** prefer events over plain callbacks, because they are more familiar to a broader range of developers and are integrated with Visual Studio statement completion.
 - ✗ **AVOID** using callbacks in performance-sensitive APIs.
 - ✓ **DO** use the new Func<...>, Action<...>, or Expression<...> types instead of custom delegates, when defining APIs with callbacks.
- Func<...> and Action<...> represent generic delegates. Expression<...> represents function definitions that can be compiled and subsequently invoked at runtime but can also be serialized and passed to remote processes.
- ✓ **DO** measure and understand performance implications of using Expression<...>, instead of using Func<...> and Action<...> delegates.
- Expression<...> types are in most cases logically equivalent to Func<...> and Action<...> delegates. The main difference between them is that the delegates are intended to be used in local process scenarios; expressions are intended for cases where it's beneficial and possible to evaluate the expression in a remote process or machine.
- ✓ **DO** understand that by calling a delegate, you are executing arbitrary code and that could have security, correctness, and compatibility repercussions.

Virtual Members

Virtual members can be overridden, thus changing the behavior of the subclass. They are quite similar to callbacks in terms of the extensibility they provide, but they are better in terms of execution performance and memory consumption. Also, virtual members feel more natural in scenarios that require creating a special kind of an existing type (specialization).

Virtual members perform better than callbacks and events, but do not perform better than non-virtual methods.

The main disadvantage of virtual members is that the behavior of a virtual member can only be modified at the time of compilation. The behavior of a callback can be modified at runtime.

Virtual members, like callbacks (and maybe more than callbacks), are costly to design, test, and maintain because any call to a virtual member can be overridden in unpredictable ways and can execute arbitrary code. Also, much more effort is usually required to clearly define the contract of virtual members, so the cost of designing and documenting them is higher.

✗ **DO NOT** make members virtual unless you have a good reason to do so and you are aware of all the costs related to designing, testing, and maintaining virtual members.

Virtual members are less forgiving in terms of changes that can be made to them without breaking compatibility. Also, they are slower than non-virtual members, mostly because calls to virtual members are not inlined.

✓ **CONSIDER** limiting extensibility to only what is absolutely necessary.

✓ **DO** prefer protected accessibility over public accessibility for virtual members. Public members should provide extensibility (if required) by calling into a protected virtual member.

The public members of a class should provide the right set of functionality for direct consumers of that class.

Virtual members are designed to be overridden in subclasses, and protected accessibility is a great way to scope all virtual extensibility points to where they can be used.

Abstractions (Abstract Types and Interfaces)

An abstraction is a type that describes a contract but does not provide a full implementation of the contract. Abstractions are usually implemented as abstract classes or interfaces, and they come with a well-defined set of

reference documentation describing the required semantics of the types implementing the contract. Some of the most important abstractions in the .NET Framework include `Stream`, `IEnumerable(Of T)`, and `Object`. You can extend frameworks by implementing a concrete type that supports the contract of an abstraction and using this concrete type with framework APIs consuming (operating on) the abstraction.

A meaningful and useful abstraction that is able to withstand the test of time is very difficult to design. The main difficulty is getting the right set of members, no more and no fewer. If an abstraction has too many members, it becomes difficult or even impossible to implement. If it has too few members for the promised functionality, it becomes useless in many interesting scenarios.

Too many abstractions in a framework also negatively affect usability of the framework. It is often quite difficult to understand an abstraction without understanding how it fits into the larger picture of the concrete implementations and the APIs operating on the abstraction. Also, names of abstractions and their members are necessarily abstract, which often makes them cryptic and unapproachable without first understanding the broader context of their usage.

However, abstractions provide extremely powerful extensibility that the other extensibility mechanisms cannot often match. They are at the core of many architectural patterns, such as plug-ins, inversion of control (IoC), pipelines, and so on. They are also extremely important for testability of frameworks. Good abstractions make it possible to stub out heavy dependencies for the purpose of unit testing. In summary, abstractions are responsible for the sought-after richness of the modern object-oriented frameworks.

X DO NOT provide abstractions unless they are tested by developing several concrete implementations and APIs consuming the abstractions.

✓ **DO** choose carefully between an abstract class and an interface when designing an abstraction.

✓ **CONSIDER** providing reference tests for concrete implementations of abstractions. Such tests should allow users to test whether their implementations correctly implement the contract.

Base Classes for Implementing Abstractions

Strictly speaking, a class becomes a base class when another class is derived from it. For the purpose of this section, however, a base class is a class designed mainly to provide a common abstraction or for other classes to reuse some default implementation through inheritance. Base classes usually sit in the middle of inheritance hierarchies, between an abstraction at the root of a hierarchy and several custom implementations at the bottom.

They serve as implementation helpers for implementing abstractions. For example, one of the Framework's abstractions for ordered collections of items is the `ICollection(Of T)` interface. Implementing `ICollection(Of T)` is not trivial, and therefore the Framework provides several base classes, such as `Collection(Of T)` and `KeyedCollection(Of TKey, TItem)`, which serve as helpers for implementing custom collections.

Base classes are usually not suited to serve as abstractions by themselves, because they tend to contain too much implementation. For example, the `Collection<T>` base class contains lots of implementation related to the fact that it implements the nongeneric `ICollection` interface (to integrate better with nongeneric collections) and to the fact that it is a collection of items stored in memory in one of its fields.

As previously discussed, base classes can provide invaluable help for users who need to implement abstractions, but at the same time they can be a significant liability. They add surface area and increase the depth of inheritance hierarchies and so conceptually complicate the framework. Therefore, base classes should be used only if they provide significant value to the users of the framework. They should be avoided if they provide value only to the implementers of the framework, in which case delegation to an internal implementation instead of inheritance from a base class should be strongly considered.

✓ **CONSIDER** making base classes abstract even if they don't contain any abstract members. This clearly communicates to the users that the class is designed solely to be inherited from.

✓ **CONSIDER** placing base classes in a separate namespace from the mainline scenario types. By definition, base classes are intended for advanced extensibility scenarios and therefore are not interesting to the majority of users.

X AVOID naming base classes with a "Base" suffix if the class is intended for use in public APIs.

Sealing

One of the features of object-oriented frameworks is that developers can extend and customize them in ways unanticipated by the framework designers. This is both the power and danger of extensible design. When you design your framework, it is, therefore, very important to carefully design for extensibility when it is desired, and to limit extensibility when it is dangerous.

A powerful mechanism that prevents extensibility is sealing. You can seal either the class or individual members. Sealing a class prevents users from inheriting from the class. Sealing a member prevents users from overriding a particular member.

X DO NOT seal classes without having a good reason to do so.

Sealing a class because you cannot think of an extensibility scenario is not a good reason. Framework users like to inherit from classes for various nonobvious reasons, like adding convenience members. See Unsealed Classes for examples of nonobvious reasons users want to inherit from a type.

Good reasons for sealing a class include the following:

- The class is a static class. See Static Class Design.
- The class stores security-sensitive secrets in inherited protected members.
- The class inherits many virtual members and the cost of sealing them individually would outweigh the benefits of leaving the class unsealed.
- The class is an attribute that requires very fast runtime look-up. Sealed attributes have slightly higher performance levels than unsealed ones. See Attributes.

X DO NOT declare protected or virtual members on sealed types.

By definition, sealed types cannot be inherited from. This means that protected members on sealed types cannot be called, and virtual methods on sealed types cannot be overridden.

✓ **CONSIDER** sealing members that you override.

Problems that can result from introducing virtual members (discussed in Virtual Members) apply to overrides as well, although to a slightly lesser degree. Sealing an override shields you from these problems starting from that point in the inheritance hierarchy

Design Guidelines for Exceptions

Exception Throwing

Exception-throwing guidelines described in this section require a good definition of the meaning of execution failure. Execution failure occurs whenever a member cannot do what it was designed to do (what the member name implies). For example, if the OpenFile method cannot return an opened file handle to the caller, it would be considered an execution failure.

Most developers have become comfortable with using exceptions for usage errors such as division by zero or null references. In the Framework, exceptions are used for all error conditions, including execution errors.

X DO NOT return error codes.

Exceptions are the primary means of reporting errors in frameworks.

✓ **DO** report execution failures by throwing exceptions.

✓ **CONSIDER** terminating the process by calling System.Environment.FailFast (.NET Framework 2.0 feature) instead of throwing an exception if your code encounters a situation where it is unsafe for further execution.

X DO NOT use exceptions for the normal flow of control, if possible.

Except for system failures and operations with potential race conditions, framework designers should design APIs so users can write code that does not throw exceptions. For example, you can provide a way to check preconditions before calling a member so users can write code that does not throw exceptions.

The member used to check preconditions of another member is often referred to as a tester, and the member that actually does the work is called a doer.

There are cases when the Tester-Doer Pattern can have an unacceptable performance overhead. In such cases, the so-called Try-Parse Pattern should be considered (see *Exceptions and Performance* for more information).

✓ **CONSIDER** the performance implications of throwing exceptions. Throw rates above 100 per second are likely to noticeably impact the performance of most applications.

✓ **DO** document all exceptions thrown by publicly callable members because of a violation of the member contract (rather than a system failure) and treat them as part of your contract.

Exceptions that are a part of the contract should not change from one version to the next (i.e., exception type should not change, and new exceptions should not be added).

X DO NOT have public members that can either throw or not based on some option.

X DO NOT have public members that return exceptions as the return value or an out parameter.

Returning exceptions from public APIs instead of throwing them defeats many of the benefits of exception-based error reporting.

✓ **CONSIDER** using exception builder methods.

It is common to throw the same exception from different places. To avoid code bloat, use helper methods that create exceptions and initialize their properties.

Also, members that throw exceptions are not getting inlined. Moving the throw statement inside the builder might allow the member to be inlined.

X DO NOT throw exceptions from exception filter blocks.

When an exception filter raises an exception, the exception is caught by the CLR, and the filter returns false. This behavior is indistinguishable from the filter executing and returning false explicitly and is therefore very difficult to debug.

X AVOID explicitly throwing exceptions from finally blocks. Implicitly thrown exceptions resulting from calling methods that throw are acceptable.

Using Standard Exception Types

Exception and SystemException

X DO NOT throw `System.Exception` or `System.SystemException`.

X DO NOT catch `System.Exception` or `System.SystemException` in framework code, unless you intend to rethrow.

X AVOID catching `System.Exception` or `System.SystemException`, except in top-level exception handlers.

ApplicationException

X DO NOT throw or derive from `ApplicationException`.

InvalidOperationException

✓ **DO** throw an `InvalidOperationException` if the object is in an inappropriate state.

ArgumentException, ArgumentNullException, and ArgumentOutOfRangeException

✓ **DO** throw `ArgumentException` or one of its subtypes if bad arguments are passed to a member. Prefer the most derived exception type, if applicable.

- ✓ **DO** set the ParamName property when throwing one of the subclasses of ArgumentException. This property represents the name of the parameter that caused the exception to be thrown. Note that the property can be set using one of the constructor overloads.
- ✓ **DO** use value for the name of the implicit value parameter of property setters.

NullReferenceException, IndexOutOfRangeException, and AccessViolationException

X DO NOT allow publicly callable APIs to explicitly or implicitly throw NullReferenceException, AccessViolationException, or IndexOutOfRangeException. These exceptions are reserved and thrown by the execution engine and in most cases indicate a bug. Do argument checking to avoid throwing these exceptions. Throwing these exceptions exposes implementation details of your method that might change over time.

StackOverflowException

X DO NOT explicitly throw StackOverflowException. The exception should be explicitly thrown only by the CLR. **X DO NOT** catch StackOverflowException. It is almost impossible to write managed code that remains consistent in the presence of arbitrary stack overflows. The unmanaged parts of the CLR remain consistent by using probes to move stack overflows to well-defined places rather than by backing out from arbitrary stack overflows.

OutOfMemoryException

X DO NOT explicitly throw OutOfMemoryException. This exception is to be thrown only by the CLR infrastructure.

ComException, SEHException, and ExecutionEngineException

X DO NOT explicitly throw COMException, ExecutionEngineException, and SEHException. These exceptions are to be thrown only by the CLR infrastructure.

Exceptions and Performance

One common concern related to exceptions is that if exceptions are used for code that routinely fails, the performance of the implementation will be unacceptable. This is a valid concern. When a member throws an exception, its performance can be orders of magnitude slower. However, it is possible to achieve good performance while strictly adhering to the exception guidelines that disallow using error codes. Two patterns described in this section suggest ways to do this.

X DO NOT use error codes because of concerns that exceptions might affect performance negatively. To improve performance, it is possible to use either the Tester-Doer Pattern or the Try-Parse Pattern, described in the next two sections.

Tester-Doer Pattern

Sometimes performance of an exception-throwing member can be improved by breaking the member into two. Let's look at the Add method of the ICollection(Of T) interface.

```
ICollection<int> numbers = ...  
numbers.Add(1);
```

The method Add throws if the collection is read-only. This can be a performance problem in scenarios where the method call is expected to fail often. One of the ways to mitigate the problem is to test whether the collection is writable before trying to add a value.

```
ICollection<int> numbers = ...  
...
```

```
if(!numbers.IsReadOnly){
    numbers.Add(1);
}
```

The member used to test a condition, which in our example is the property `IsReadOnly`, is referred to as the tester. The member used to perform a potentially throwing operation, the `Add` method in our example, is referred to as the doer.

✓ **CONSIDER** the Tester-Doer Pattern for members that might throw exceptions in common scenarios to avoid performance problems related to exceptions.

Try-Parse Pattern

For extremely performance-sensitive APIs, an even faster pattern than the Tester-Doer Pattern described in the previous section should be used. The pattern calls for adjusting the member name to make a well-defined test case a part of the member semantics. For example, `DateTime` defines a `Parse` method that throws an exception if parsing of a string fails. It also defines a corresponding `TryParse` method that attempts to parse, but returns false if parsing is unsuccessful and returns the result of a successful parsing using an out parameter.

```
public struct DateTime {
    public static DateTime Parse(string dateTime){
        ...
    }
    public static bool TryParse(string dateTime, out DateTime result){
        ...
    }
}
```

When using this pattern, it is important to define the try functionality in strict terms. If the member fails for any reason other than the well-defined try, the member must still throw a corresponding exception.

✓ **CONSIDER** the Try-Parse Pattern for members that might throw exceptions in common scenarios to avoid performance problems related to exceptions.

✓ **DO** use the prefix "Try" and Boolean return type for methods implementing this pattern.

✓ **DO** provide an exception-throwing member for each member using the Try-Parse Pattern.

Usage Guidelines

Arrays

✓ **DO** prefer using collections over arrays in public APIs. The Guidelines for Collections section provides details about how to choose between collections and arrays.

X DO NOT use read-only array fields. The field itself is read-only and can't be changed, but elements in the array can be changed.

✓ **CONSIDER** using jagged arrays instead of multidimensional arrays.

A jagged array is an array with elements that are also arrays. The arrays that make up the elements can be of different sizes, leading to less wasted space for some sets of data (e.g., sparse matrix) compared to multidimensional arrays. Furthermore, the CLR optimizes index operations on jagged arrays, so they might exhibit better runtime performance in some scenarios.

Attributes

System.Attribute is a base class used to define custom attributes.

Attributes are annotations that can be added to programming elements such as assemblies, types, members, and parameters. They are stored in the metadata of the assembly and can be accessed at runtime using the

reflection APIs. For example, the Framework defines the `ObsoleteAttribute`, which can be applied to a type or a member to indicate that the type or member has been deprecated.

Attributes can have one or more properties that carry additional data related to the attribute. For example, `ObsoleteAttribute` could carry additional information about the release in which a type or a member got deprecated and the description of the new APIs replacing the obsolete API.

Some properties of an attribute must be specified when the attribute is applied. These are referred to as the required properties or required arguments, because they are represented as positional constructor parameters. For example, the `ConditionString` property of the `ConditionalAttribute` is a required property.

Properties that do not necessarily have to be specified when the attribute is applied are called optional properties (or optional arguments). They are represented by settable properties. Compilers provide special syntax to set these properties when an attribute is applied. For example, the `AttributeUsageAttribute.Inherited` property represents an optional argument.

✓ **DO** name custom attribute classes with the suffix "Attribute."

✓ **DO** apply the `AttributeUsageAttribute` to custom attributes.

✓ **DO** provide settable properties for optional arguments.

✓ **DO** provide get-only properties for required arguments.

✓ **DO** provide constructor parameters to initialize properties corresponding to required arguments. Each parameter should have the same name (although with different casing) as the corresponding property.

X AVOID providing constructor parameters to initialize properties corresponding to the optional arguments.

In other words, do not have properties that can be set with both a constructor and a setter. This guideline makes very explicit which arguments are optional and which are required, and avoids having two ways of doing the same thing.

X AVOID overloading custom attribute constructors.

Having only one constructor clearly communicates to the user which arguments are required and which are optional.

✓ **DO** seal custom attribute classes, if possible. This makes the look-up for the attribute faster.

Collections

Any type designed specifically to manipulate a group of objects having some common characteristic can be considered a collection. It is almost always appropriate for such types to implement `IEnumerable` or `IEnumerable(Of T)`, so in this section we only consider types implementing one or both of those interfaces to be collections.

X DO NOT use weakly typed collections in public APIs.

The type of all return values and parameters representing collection items should be the exact item type, not any of its base types (this applies only to public members of the collection).

X DO NOT use `ArrayList` or `List(Of T)` in public APIs.

These types are data structures designed to be used in internal implementation, not in public APIs. `List<T>` is optimized for performance and power at the cost of cleanness of the APIs and flexibility. For example, if you return `List<T>`, you will not ever be able to receive notifications when client code modifies the collection.

Also, `List<T>` exposes many members, such as `BinarySearch`, that are not useful or applicable in many scenarios. The following two sections describe types (abstractions) designed specifically for use in public APIs.

X DO NOT use `Hashtable` or `Dictionary<TKey,TValue>` in public APIs.

These types are data structures designed to be used in internal implementation. Public APIs should use `IDictionary`, `IDictionary <TKey, TValue>`, or a custom type implementing one or both of the interfaces.

X DO NOT use `IEnumerator(Of T)`, `IEnumerator`, or any other type that implements either of these interfaces, except as the return type of a `GetEnumerator` method.

Types returning enumerators from methods other than `GetEnumerator` cannot be used with the `foreach` statement.

X DO NOT implement both `IEnumerator<T>` and `IEnumerable<T>` on the same type. The same applies to the nongeneric interfaces `IEnumerator` and `IEnumerable`.

Collection Parameters

✓ **DO** use the least-specialized type possible as a parameter type. Most members taking collections as parameters use the `IEnumerable<T>` interface.

X AVOID using `ICollection(Of T)` or `ICollection` as a parameter just to access the `Count` property. Instead, consider using `IEnumerable<T>` or `IEnumerable` and dynamically checking whether the object implements `ICollection<T>` or `ICollection`.

Collection Properties and Return Values

X DO NOT provide settable collection properties.

Users can replace the contents of the collection by clearing the collection first and then adding the new contents. If replacing the whole collection is a common scenario, consider providing the `AddRange` method on the collection.

✓ **DO** use `Collection<T>` or a subclass of `Collection<T>` for properties or return values representing read/write collections.

If `Collection<T>` does not meet some requirement (e.g., the collection must not implement `ICollection`), use a custom collection by implementing `IEnumerable<T>`, `ICollection<T>`, or `ICollection(Of T)`.

✓ **DO** use `ReadOnlyCollection(Of T)`, a subclass of `ReadOnlyCollection<T>`, or in rare cases `IEnumerable<T>` for properties or return values representing read-only collections.

In general, prefer `ReadOnlyCollection<T>`. If it does not meet some requirement (e.g., the collection must not implement `ICollection`), use a custom collection by implementing `IEnumerable<T>`, `ICollection<T>`, or `ICollection(Of T)`. If you do implement a custom read-only collection, implement `ICollection<T>.ReadOnly` to return `false`.

In cases where you are sure that the only scenario you will ever want to support is forward-only iteration, you can simply use `IEnumerable<T>`.

✓ **CONSIDER** using subclasses of generic base collections instead of using the collections directly.

This allows for a better name and for adding helper members that are not present on the base collection types. This is especially applicable to high-level APIs.

✓ **CONSIDER** returning a subclass of `Collection<T>` or `ReadOnlyCollection<T>` from very commonly used methods and properties.

This will make it possible for you to add helper methods or change the collection implementation in the future.

✓ **CONSIDER** using a keyed collection if the items stored in the collection have unique keys (names, IDs, etc.).

Keyed collections are collections that can be indexed by both an integer and a key and are usually implemented by inheriting from `KeyedCollection<TKey,TItem>`.

Keyed collections usually have larger memory footprints and should not be used if the memory overhead outweighs the benefits of having the keys.

X DO NOT return null values from collection properties or from methods returning collections. Return an empty collection or an empty array instead.

The general rule is that null and empty (0 item) collections or arrays should be treated the same.

Snapshots Versus Live Collections

Collections representing a state at some point in time are called snapshot collections. For example, a collection containing rows returned from a database query would be a snapshot. Collections that always represent the current state are called live collections. For example, a collection of `ComboBox` items is a live collection.

X DO NOT return snapshot collections from properties. Properties should return live collections.

Property getters should be very lightweight operations. Returning a snapshot requires creating a copy of an internal collection in an $O(n)$ operation.

✓ **DO** use either a snapshot collection or a live `IEnumerable<T>` (or its subtype) to represent collections that are volatile (i.e., that can change without explicitly modifying the collection).

In general, all collections representing a shared resource (e.g., files in a directory) are volatile. Such collections are very difficult or impossible to implement as live collections unless the implementation is simply a forward-only enumerator.

Choosing Between Arrays and Collections

✓ **DO** prefer collections over arrays.

Collections provide more control over contents, can evolve over time, and are more usable. In addition, using arrays for read-only scenarios is discouraged because the cost of cloning the array is prohibitive. Usability studies have shown that some developers feel more comfortable using collection-based APIs.

However, if you are developing low-level APIs, it might be better to use arrays for read-write scenarios. Arrays have a smaller memory footprint, which helps reduce the working set, and access to elements in an array is faster because it is optimized by the runtime.

✓ **CONSIDER** using arrays in low-level APIs to minimize memory consumption and maximize performance.

✓ **DO** use byte arrays instead of collections of bytes.

X DO NOT use arrays for properties if the property would have to return a new array (e.g., a copy of an internal array) every time the property getter is called.

Implementing Custom Collections

✓ **CONSIDER** inheriting from `Collection<T>`, `ReadOnlyCollection<T>`, or `KeyedCollection<TKey,TItem>` when designing new collections.

✓ **DO** implement `IEnumerable<T>` when designing new collections. Consider implementing `ICollection<T>` or even `IList<T>` where it makes sense.

When implementing such custom collection, follow the API pattern established by `Collection<T>` and `ReadOnlyCollection<T>` as closely as possible. That is, implement the same members explicitly, name the parameters like these two collections name them, and so on.

✓ **CONSIDER** implementing nongeneric collection interfaces (`IList` and `ICollection`) if the collection will often be passed to APIs taking these interfaces as input.

X AVOID implementing collection interfaces on types with complex APIs unrelated to the concept of a collection.

X DO NOT inherit from nongeneric base collections such as `CollectionBase`.

Use **`Collection<T>`, `ReadOnlyCollection<T>`, and `KeyedCollection<TKey,TItem>`** instead.

Naming Custom Collections

Collections (types that implement `IEnumerable`) are created mainly for two reasons: (1) to create a new data structure with structure-specific operations and often different performance characteristics than existing data structures (e.g., `List(Of T)`, `LinkedList(Of T)`, `Stack(Of T)`), and (2) to create a specialized collection for holding a specific set of items (e.g., `StringCollection`). Data structures are most often used in the internal implementation of applications and libraries. Specialized collections are mainly to be exposed in APIs (as property and parameter types).

✓ **DO** use the "Dictionary" suffix in names of abstractions implementing `IDictionary` or `IDictionary<TKey,TValue>`.

✓ **DO** use the "Collection" suffix in names of types implementing `IEnumerable` (or any of its descendants) and representing a list of items.

✓ **DO** use the appropriate data structure name for custom data structures.

X AVOID using any suffixes implying particular implementation, such as "LinkedList" or "Hashtable," in names of collection abstractions.

✓ **CONSIDER** prefixing collection names with the name of the item type. For example, a collection storing items of type Address (implementing IEnumerable<Address>) should be named AddressCollection. If the item type is an interface, the "I" prefix of the item type can be omitted. Thus, a collection of IDisposable items can be called DisposableCollection.

✓ **CONSIDER** using the "ReadOnly" prefix in names of read-only collections if a corresponding writeable collection might be added or already exists in the framework.

For example, a read-only collection of strings should be called ReadOnlyStringCollection.

Serialization

Serialization is the process of converting an object into a format that can be readily persisted or transported. For example, you can serialize an object, transport it over the Internet using HTTP, and deserialized it at the destination machine.

The .NET Framework offers three main serialization technologies optimized for various serialization scenarios. The following table lists these technologies and the main Framework types related to these technologies.

Technology Name	Main Types	Scenarios
Data Contract Serialization	DataContractAttribute DataMemberAttribute DataContractSerializer NetDataContractSerializer DataContractJsonSerializer ISerializable	General persistence Web Services JSON
XML Serialization	XmlSerializer	XML format with full control over the shape of the XML
Runtime Serialization (Binary and SOAP)	SerializableAttribute ISerializable BinaryFormatter SoapFormatter	.NET Remoting

✓ **DO** think about serialization when you design new types.

Choosing the Right Serialization Technology to Support

✓ **CONSIDER** supporting Data Contract Serialization if instances of your type might need to be persisted or used in Web Services.

✓ **CONSIDER** supporting the XML Serialization instead of or in addition to Data Contract Serialization if you need more control over the XML format that is produced when the type is serialized.

This may be necessary in some interoperability scenarios where you need to use an XML construct that is not supported by Data Contract Serialization, for example, to produce XML attributes.

✓ **CONSIDER** supporting the Runtime Serialization if instances of your type need to travel across .NET Remoting boundaries.

X AVOID supporting Runtime Serialization or XML Serialization just for general persistence reasons. Prefer Data Contract Serialization instead.

Supporting Data Contract Serialization

Types can support Data Contract Serialization by applying the `DataContractAttribute` to the type and the `DataMemberAttribute` to the members (fields and properties) of the type.

✓ **CONSIDER** marking data members of your type public if the type can be used in partial trust.

In full trust, Data Contract serializers can serialize and deserialize nonpublic types and members, but only public members can be serialized and deserialized in partial trust.

✓ **DO** implement a getter and setter on all properties that have `DataMemberAttribute`. Data Contract serializers require both the getter and the setter for the type to be considered serializable. (In .NET Framework 3.5 SP1, some collection properties can be get-only.) If the type won't be used in partial trust, one or both of the property accessors can be nonpublic.

✓ **CONSIDER** using the serialization callbacks for initialization of deserialized instances.

Constructors are not called when objects are deserialized. (There are exceptions to the rule. Constructors of collections marked with `CollectionDataContractAttribute` are called during deserialization.) Therefore, any logic that executes during normal construction needs to be implemented as one of the serialization callbacks.

`OnDeserializedAttribute` is the most commonly used callback attribute. The other attributes in the family are `OnDeserializingAttribute`, `OnSerializingAttribute`, and `OnSerializedAttribute`. They can be used to mark callbacks that get executed before deserialization, before serialization, and finally, after serialization, respectively.

✓ **CONSIDER** using the `KnownTypeAttribute` to indicate concrete types that should be used when deserializing a complex object graph.

✓ **DO** consider backward and forward compatibility when creating or changing serializable types.

Keep in mind that serialized streams of future versions of your type can be deserialized into the current version of the type, and vice versa.

Make sure you understand that data members, even private and internal, cannot change their names, types, or even their order in future versions of the type unless special care is taken to preserve the contract using explicit parameters to the data contract attributes.

Test compatibility of serialization when making changes to serializable types. Try deserializing the new version into an old version, and vice versa.

✓ **CONSIDER** implementing `IExtensibleDataObject` to allow round-tripping between different versions of the type.

The interface allows the serializer to ensure that no data is lost during round-tripping.

The `IExtensibleDataObject.ExtensionData` property is used to store any data from the future version of the type that is unknown to the current version, and so it cannot store it in its data members. When the current version is subsequently serialized and deserialized into a future version, the additional data will be available in the serialized stream.

Supporting XML Serialization

Data Contract Serialization is the main (default) serialization technology in the .NET Framework, but there are serialization scenarios that Data Contract Serialization does not support. For example, it does not give you full control over the shape of XML produced or consumed by the serializer. If such fine control is required, XML Serialization has to be used, and you need to design your types to support this serialization technology.

X AVOID designing your types specifically for XML Serialization, unless you have a very strong reason to control the shape of the XML produced. This serialization technology has been superseded by the Data Contract Serialization discussed in the previous section.

✓ **CONSIDER** implementing the `IXmlSerializable` interface if you want even more control over the shape of the serialized XML than what's offered by applying the XML Serialization attributes. Two methods of the interface, `ReadXml` and `WriteXml`, allow you to fully control the serialized XML stream. You can also control the XML schema that gets generated for the type by applying the `XmlSchemaProviderAttribute`.

Supporting Runtime Serialization

Runtime Serialization is a technology used by .NET Remoting. If you think your types will be transported using .NET Remoting, you need to make sure they support Runtime Serialization.

The basic support for Runtime Serialization can be provided by applying the `SerializableAttribute`, and more advanced scenarios involve implementing a simple Runtime Serializable Pattern (implement `ISerializable` and provide serialization constructor).

✓ **CONSIDER** supporting Runtime Serialization if your types will be used with .NET Remoting. For example, the `System.AddIn` namespace uses .NET Remoting, and so all types exchanged between `System.AddIn` add-ins need to support Runtime Serialization.

✓ **CONSIDER** implementing the Runtime Serializable Pattern if you want complete control over the serialization process. For example, if you want to transform data as it gets serialized or deserialized.

The pattern is very simple. All you need to do is implement the `ISerializable` interface and provide a special constructor that is used when the object is deserialized.

✓ **DO** make the serialization constructor protected and provide two parameters typed and named exactly as shown in the sample here.

[Serializable]

```
public class Person : ISerializable {  
    protected Person(SerializationInfo info, StreamingContext context) {  
        ...  
    }  
}
```

✓ **DO** implement the `ISerializable` members explicitly.

✓ **DO** apply a link demand to `ISerializable.GetObjectData` implementation. This ensures that only fully trusted core and the Runtime Serializer have access to the member.

System.Xml Usage

This section talks about usage of several types residing in `System.Xml` namespaces that can be used to represent XML data.

X DO NOT use `XmlNode` or `XmlDocument` to represent XML data. Favor using instances of `IXPathNavigable`, `XmlReader`, `XmlWriter`, or subtypes of `XNode` instead. `XmlNode` and `XmlDocument` are not designed for exposing in public APIs.

✓ **DO** use `XmlReader`, `IXPathNavigable`, or subtypes of `XNode` as input or output of members that accept or return XML.

Use these abstractions instead of `XmlDocument`, `XmlNode`, or `XPathDocument`, because this decouples the methods from specific implementations of an in-memory XML document and allows them to work with virtual XML data sources that expose `XNode`, `XmlReader`, or `XPathNavigator`.

X DO NOT subclass `XmlDocument` if you want to create a type representing an XML view of an underlying object model or data source.

Equality Operators

This section discusses overloading equality operators and refers to `operator==` and `operator!=` as equality operators.

X DO NOT overload one of the equality operators and not the other.

✓ **DO** ensure that `Object.Equals` and the equality operators have exactly the same semantics and similar performance characteristics.

This often means that `Object.Equals` needs to be overridden when the equality operators are overloaded.

X AVOID throwing exceptions from equality operators.

For example, return false if one of the arguments is null instead of throwing `NullReferenceException`.

Equality Operators on Value Types

✓ **DO** overload the equality operators on value types, if equality is meaningful.

In most programming languages, there is no default implementation of operator `==` for value types.

Equality Operators on Reference Types

X AVOID overloading equality operators on mutable reference types.

Many languages have built-in equality operators for reference types. The built-in operators usually implement the reference equality, and many developers are surprised when the default behavior is changed to the value equality.

This problem is mitigated for immutable reference types because immutability makes it much harder to notice the difference between reference equality and value equality.

X AVOID overloading equality operators on reference types if the implementation would be significantly slower than that of reference equality.

Common Design Patterns

Dependency Properties

A dependency property (DP) is a regular property that stores its value in a property store instead of storing it in a type variable (field), for example.

An attached dependency property is a kind of dependency property modeled as static Get and Set methods representing "properties" describing relationships between objects and their containers (e.g., the position of a Button object on a Panel container).

✓ **DO** provide the dependency properties, if you need the properties to support WPF features such as styling, triggers, data binding, animations, dynamic resources, and inheritance.

Dependency Property Design

✓ **DO** inherit from `DependencyObject`, or one of its subtypes, when implementing dependency properties. The type provides a very efficient implementation of a property store and automatically supports WPF data binding.

✓ **DO** provide a regular CLR property and public static read-only field storing an instance of `System.Windows.DependencyProperty` for each dependency property.

✓ **DO** implement dependency properties by calling instance methods `DependencyObject.GetValue` and `DependencyObject.SetValue`.

✓ **DO** name the dependency property static field by suffixing the name of the property with "Property."

X DO NOT set default values of dependency properties explicitly in code; set them in metadata instead.

If you set a property default explicitly, you might prevent that property from being set by some implicit means, such as a styling.

X DO NOT put code in the property accessors other than the standard code to access the static field.

That code won't execute if the property is set by implicit means, such as a styling, because styling uses the static field directly.

X DO NOT use dependency properties to store secure data. Even private dependency properties can be accessed publicly.

Attached Dependency Property Design

Dependency properties described in the preceding section represent intrinsic properties of the declaring type; for example, the Text property is a property of TextButton, which declares it. A special kind of dependency property is the attached dependency property.

A classic example of an attached property is the Grid.Column property. The property represents Button's (not Grid's) column position, but it is only relevant if the Button is contained in a Grid, and so it's "attached" to Buttons by Grids.

```
<Grid>
  <Grid.ColumnDefinitions>
    <ColumnDefinition />
    <ColumnDefinition />
  </Grid.ColumnDefinitions>

  <Button Grid.Column="0">Click</Button>
  <Button Grid.Column="1">Clack</Button>
</Grid>
```

The definition of an attached property looks mostly like that of a regular dependency property, except that the accessors are represented by static Get and Set methods:

```
public class Grid {

    public static int GetColumn(DependencyObject obj) {
        return (int)obj.GetValue(ColumnProperty);
    }

    public static void SetColumn(DependencyObject obj, int value) {
        obj.SetValue(ColumnProperty,value);
    }

    public static readonly DependencyProperty ColumnProperty =
        DependencyProperty.RegisterAttached(
            "Column",
            typeof(int),
            typeof(Grid)
        );
}
```

Dependency Property Validation

Properties often implement what is called validation. Validation logic executes when an attempt is made to change the value of a property.

Unfortunately dependency property accessors cannot contain arbitrary validation code. Instead, dependency property validation logic needs to be specified during property registration.

X DO NOT put dependency property validation logic in the property's accessors. Instead, pass a validation callback to DependencyProperty.Register method.

Dependency Property Change Notifications

X DO NOT implement change notification logic in dependency property accessors. Dependency properties have a built-in change notifications feature that must be used by supplying a change notification callback to thePropertyMetadata.

Dependency Property Value Coercion

Property coercion takes place when the value given to a property setter is modified by the setter before the property store is actually modified.

X DO NOT implement coercion logic in dependency property accessors.

Dependency properties have a built-in coercion feature, and it can be used by supplying a coercion callback to the `PropertyMetadata`.

Dispose Pattern

All programs acquire one or more system resources, such as memory, system handles, or database connections, during the course of their execution. Developers have to be careful when using such system resources, because they must be released after they have been acquired and used.

The CLR provides support for automatic memory management. Managed memory (memory allocated using the C# operator `new`) does not need to be explicitly released. It is released automatically by the garbage collector (GC). This frees developers from the tedious and difficult task of releasing memory and has been one of the main reasons for the unprecedented productivity afforded by the .NET Framework.

Unfortunately, managed memory is just one of many types of system resources. Resources other than managed memory still need to be released explicitly and are referred to as unmanaged resources. The GC was specifically not designed to manage such unmanaged resources, which means that the responsibility for managing unmanaged resources lies in the hands of the developers.

The CLR provides some help in releasing unmanaged resources. `System.Object` declares a virtual method `Finalize` (also called the finalizer) that is called by the GC before the object's memory is reclaimed by the GC and can be overridden to release unmanaged resources. Types that override the finalizer are referred to as finalizable types.

Although finalizers are effective in some cleanup scenarios, they have two significant drawbacks:

- The finalizer is called when the GC detects that an object is eligible for collection. This happens at some undetermined period of time after the resource is not needed anymore. The delay between when the developer could or would like to release the resource and the time when the resource is actually released by the finalizer might be unacceptable in programs that acquire many scarce resources (resources that can be easily exhausted) or in cases in which resources are costly to keep in use (e.g., large unmanaged memory buffers).
- When the CLR needs to call a finalizer, it must postpone collection of the object's memory until the next round of garbage collection (the finalizers run between collections). This means that the object's memory (and all objects it refers to) will not be released for a longer period of time.

Therefore, relying exclusively on finalizers might not be appropriate in many scenarios when it is important to reclaim unmanaged resources as quickly as possible, when dealing with scarce resources, or in highly performant scenarios in which the added GC overhead of finalization is unacceptable.

The Framework provides the `System.IDisposable` interface that should be implemented to provide the developer a manual way to release unmanaged resources as soon as they are not needed. It also provides the `GC.SuppressFinalize` method that can tell the GC that an object was manually disposed of and does not need to be finalized anymore, in which case the object's memory can be reclaimed earlier. Types that implement the `IDisposable` interface are referred to as disposable types.

The Dispose Pattern is intended to standardize the usage and implementation of finalizers and the `IDisposable` interface.

The main motivation for the pattern is to reduce the complexity of the implementation of the `Finalize` and the `Dispose` methods. The complexity stems from the fact that the methods share some but not all code paths (the differences are described later in the chapter). In addition, there are historical reasons for some elements of the pattern related to the evolution of language support for deterministic resource management.

✓ **DO** implement the Basic Dispose Pattern on types containing instances of disposable types. See the Basic Dispose Pattern section for details on the basic pattern.

If a type is responsible for the lifetime of other disposable objects, developers need a way to dispose of them, too. Using the container's Dispose method is a convenient way to make this possible.

✓ **DO** implement the Basic Dispose Pattern and provide a finalizer on types holding resources that need to be freed explicitly and that do not have finalizers.

For example, the pattern should be implemented on types storing unmanaged memory buffers. The Finalizable Types section discusses guidelines related to implementing finalizers.

✓ **CONSIDER** implementing the Basic Dispose Pattern on classes that themselves don't hold unmanaged resources or disposable objects but are likely to have subtypes that do.

A great example of this is the System.IO.Stream class. Although it is an abstract base class that doesn't hold any resources, most of its subclasses do and because of this, it implements this pattern.

Basic Dispose Pattern

The basic implementation of the pattern involves implementing the System.IDisposable interface and declaring the Dispose(bool) method that implements all resource cleanup logic to be shared between the Dispose method and the optional finalizer.

The following example shows a simple implementation of the basic pattern:

```
public class DisposableResourceHolder : IDisposable {
```

```
    private SafeHandle resource; // handle to a resource
```

```
    public DisposableResourceHolder(){  
        this.resource = ... // allocates the resource  
    }
```

```
    public void Dispose(){  
        Dispose(true);  
        GC.SuppressFinalize(this);  
    }
```

```
    protected virtual void Dispose(bool disposing){  
        if (disposing){  
            if (resource!= null) resource.Dispose();  
        }  
    }
```

The Boolean parameter disposing indicates whether the method was invoked from the IDisposable.Dispose implementation or from the finalizer. The Dispose(bool) implementation should check the parameter before accessing other reference objects (e.g., the resource field in the preceding sample). Such objects should only be accessed when the method is called from the IDisposable.Dispose implementation (when the disposing parameter is equal to true). If the method is invoked from the finalizer (disposing is false), other objects should not be accessed. The reason is that objects are finalized in an unpredictable order and so they, or any of their dependencies, might already have been finalized.

Also, this section applies to classes with a base that does not already implement the Dispose Pattern. If you are inheriting from a class that already implements the pattern, simply override the Dispose(bool) method to provide additional resource cleanup logic.

✓ **DO** declare a protected virtual void Dispose(bool disposing) method to centralize all logic related to releasing unmanaged resources.

All resource cleanup should occur in this method. The method is called from both the finalizer and the IDisposable.Dispose method. The parameter will be false if being invoked from inside a finalizer. It should

be used to ensure any code running during finalization is not accessing other finalizable objects. Details of implementing finalizers are described in the next section.

```
protected virtual void Dispose(bool disposing){  
    if (disposing){  
        if (resource!= null) resource.Dispose();  
    }  
}
```

✓ **DO** implement the IDisposable interface by simply calling Dispose(true) followed by GC.SuppressFinalize(this). The call to SuppressFinalize should only occur if Dispose(true) executes successfully.

```
public void Dispose(){  
    Dispose(true);  
    GC.SuppressFinalize(this);  
}
```

X DO NOT make the parameterless Dispose method virtual.

The Dispose(bool) method is the one that should be overridden by subclasses.

// bad design

```
public class DisposableResourceHolder : IDisposable {  
    public virtual void Dispose(){ ... }  
    protected virtual void Dispose(bool disposing){ ... }  
}
```

// good design

```
public class DisposableResourceHolder : IDisposable {  
    public void Dispose(){ ... }  
    protected virtual void Dispose(bool disposing){ ... }  
}
```

X DO NOT declare any overloads of the Dispose method other than Dispose() and Dispose(bool).

Dispose should be considered a reserved word to help codify this pattern and prevent confusion among implementers, users, and compilers. Some languages might choose to automatically implement this pattern on certain types.

✓ **DO** allow the Dispose(bool) method to be called more than once. The method might choose to do nothing after the first call.

```
public class DisposableResourceHolder : IDisposable {  
  
    bool disposed = false;  
  
    protected virtual void Dispose(bool disposing){  
        if(disposed) return;  
        // cleanup  
        ...  
        disposed = true;  
    }  
}
```

X AVOID throwing an exception from within Dispose(bool) except under critical situations where the containing process has been corrupted (leaks, inconsistent shared state, etc.).

Users expect that a call to Dispose will not raise an exception.

If Dispose could raise an exception, further finally-block cleanup logic will not execute. To work around this, the user would need to wrap every call to Dispose (within the finally block!) in a try block, which leads to very complex cleanup handlers. If executing a Dispose(bool disposing) method, never throw an exception if disposing is false. Doing so will terminate the process if executing inside a finalizer context.

✓ **DO** throw an ObjectDisposedException from any member that cannot be used after the object has been disposed of.

```

public class DisposableResourceHolder : IDisposable {
    bool disposed = false;
    SafeHandle resource; // handle to a resource

    public void DoSomething(){
        if(disposed) throw new ObjectDisposedException(...);
        // now call some native methods using the resource
        ...
    }
    protected virtual void Dispose(bool disposing){
        if(disposed) return;
        // cleanup
        ...
        disposed = true;
    }
}

```

✓ **CONSIDER** providing method Close(), in addition to the Dispose(), if close is standard terminology in the area.

When doing so, it is important that you make the Close implementation identical to Dispose and consider implementing the IDisposable.Dispose method explicitly.

```

public class Stream : IDisposable {
    IDisposable.Dispose(){
        Close();
    }
    public void Close(){
        Dispose(true);
        GC.SuppressFinalize(this);
    }
}

```

Finalizable Types

Finalizable types are types that extend the Basic Dispose Pattern by overriding the finalizer and providing finalization code path in the Dispose(bool) method.

Finalizers are notoriously difficult to implement correctly, primarily because you cannot make certain (normally valid) assumptions about the state of the system during their execution. The following guidelines should be taken into careful consideration.

Note that some of the guidelines apply not just to the Finalize method, but to any code called from a finalizer. In the case of the Basic Dispose Pattern previously defined, this means logic that executes inside Dispose(bool disposing) when the disposing parameter is false.

If the base class already is finalizable and implements the Basic Dispose Pattern, you should not override Finalize again. You should instead just override the Dispose(bool) method to provide additional resource cleanup logic.

The following code shows an example of a finalizable type:

```

public class ComplexResourceHolder : IDisposable {

    private IntPtr buffer; // unmanaged memory buffer
    private SafeHandle resource; // disposable handle to a resource

    public ComplexResourceHolder(){
        this.buffer = ... // allocates memory
        this.resource = ... // allocates the resource
    }
}

```

```

}

protected virtual void Dispose(bool disposing){
    ReleaseBuffer(buffer); // release unmanaged memory
    if (disposing){ // release other disposable objects
        if (resource!= null) resource.Dispose();
    }
}

~ ComplexResourceHolder(){
    Dispose(false);
}

public void Dispose(){
    Dispose(true);
    GC.SuppressFinalize(this);
}
}

```

X AVOID making types finalizable.

Carefully consider any case in which you think a finalizer is needed. There is a real cost associated with instances with finalizers, from both a performance and code complexity standpoint. Prefer using resource wrappers such as `SafeHandle` to encapsulate unmanaged resources where possible, in which case a finalizer becomes unnecessary because the wrapper is responsible for its own resource cleanup.

X DO NOT make value types finalizable.

Only reference types actually get finalized by the CLR, and thus any attempt to place a finalizer on a value type will be ignored. The C# and C++ compilers enforce this rule.

✓ **DO** make a type finalizable if the type is responsible for releasing an unmanaged resource that does not have its own finalizer.

When implementing the finalizer, simply call `Dispose(false)` and place all resource cleanup logic inside the `Dispose(bool disposing)` method.

```
public class ComplexResourceHolder : IDisposable {
```

```

    ~ ComplexResourceHolder(){
        Dispose(false);
    }

    protected virtual void Dispose(bool disposing){
        ...
    }
}

```

✓ **DO** implement the Basic Dispose Pattern on every finalizable type.

This gives users of the type a means to explicitly perform deterministic cleanup of those same resources for which the finalizer is responsible.

X DO NOT access any finalizable objects in the finalizer code path, because there is significant risk that they will have already been finalized.

For example, a finalizable object A that has a reference to another finalizable object B cannot reliably use B in A's finalizer, or vice versa. Finalizers are called in a random order (short of a weak ordering guarantee for critical finalization).

Also, be aware that objects stored in static variables will get collected at certain points during an application domain unload or while exiting the process. Accessing a static variable that refers to a finalizable object (or calling a static method that might use values stored in static variables) might not be safe

if `Environment.HasShutdownStarted` returns true.

✓ **DO** make your Finalize method protected.

C#, C++, and VB.NET developers do not need to worry about this, because the compilers help to enforce this guideline.

X DO NOT let exceptions escape from the finalizer logic, except for system-critical failures.

If an exception is thrown from a finalizer, the CLR will shut down the entire process (as of .NET Framework version 2.0), preventing other finalizers from executing and resources from being released in a controlled manner.

✓ **CONSIDER** creating and using a critical finalizable object (a type with a type hierarchy that contains CriticalFinalizerObject) for situations in which a finalizer absolutely must execute even in the face of forced application domain unloads and thread aborts.

Checklist for code reviews

Inline Documentation

1. **Module Headers**
2. **Standard Routine Headers**
3. **Routine parameters, return values, assumptions**
4. **Constants, Module and Global variables**
5. **Routines primary path**
6. **Tricky code, special cases, exception handlers**

Standards and guidelines

1. **Project Name and description**
2. **Standard designs – message handling, clipboard, settings, etc**
3. **Namespaces:**
4. **CompanyName.TechnologyName[.Feature][.Design]**
5. **Class Naming – (Pascal Case, do not use _ or prefix)**
6. **Interface Naming – (I prefix, Pascal Case)**
7. **Attributes Naming – (use attribute suffix)**
8. **Interface Naming – (I prefix, Pascal Case)**
9. **Enum Naming – (no suffix, Pascal Case)**
10. **Static Field Naming – (Pascal Case)**
11. **Parameter Naming – (Camel Case)**
12. **Method Naming – (Pascal Case)**
13. **Property Naming – (Pascal Case)**
14. **Event Handler– (EventHandler suffix)**

Change Control

1. **Amendment history included**
2. **Marked changed code**
3. **Implementation of new/changed Interfaces**

Requirements/Design

1. All specification features implemented
2. Verification of the requirements - Unit Test
3. Implementation of all interfaces defined
4. Design document updated, according design changes in the implementation

Performance/Optimization

1. File I/O optimized for efficiency
2. File opened only once to process (unless a random-access file)
3. DB - operations implemented for efficiency
4. DB – correct cursor and location specified for the type of use
5. DB – Use of indexed, record pointers, bookmarks
6. DB – Extra records (unused) in recordsets
7. Loops optimization
8. Recursive routines optimization

Robustness

1. Error Handling – avoid application crash
2. Error Handling – meaningful defined error messages
3. Error Handling – raise different error messages, according to the exceptions to provide appropriate automated response or indication to the user
4. Error Handling – use of event log (to be isolated and reproduced later)
5. Error Handling – catch blocks for all type of exceptions
6. Transaction – group related executions and protect against failures (Commit, Rollback)

Data Use and Control

1. Minimize use of global variables
2. Module variables use
3. Variables – declarations with the smallest scope possible
4. Variables – declared with a specific type (the smallest type appropriate for the data)
5. Variables – clear names to identify the use
6. Variables - Data comparisons of the same type
7. Variables (module and global) – initialized to default values
8. Magic numbers avoided using constants and macros
9. Use of Multiple-individual variables – group related data instead

Execution Control

1. Functions – return proper value
2. Recursive functions – boundary safeguards
3. Modularization use – remove deep nesting of control statements.
4. Comparisons – proper bracketed evaluations (ensure right order of priority)

Portability

1. External OS related components testing – ensure compliance with requirements
2. Platform specific code – clearly identified

Localization (if supported)

1. **Component integrations with the OS regional settings or any application settings**
2. **Code implemented to account for user localization issues**
3. **Presenting data – user specified date, currency formats, font, color selections, sort orders etc.**
4. **Application correct respond to region changes**
5. **Use of Resource file or language library – to enable easy deploy in multiple languages**

Style and Layout

1. **Consistent use of style elements**
2. **Code easy to read**

Reusable

1. **Common code identified for inclusion in a common library**
2. **Duplicated common code**

Testable

1. **Driver program for independent test of the component**
2. **Unit test plans used and applied – to identify critical test elements**

Data Access

1. **General configurations (connection string)**
2. **Proper use of Data objects**
3. **Error Handle – use try – catch – finally blocks (close connection object)**

Assemblies

1. **Naming Conventions (namespace)**
2. **Assembly location (local, GAC)**
3. **Multi File / Single File assembly**
4. **Versioning**

ASP.NET

1. **State Management (State object, Session / Application)**
2. **Configuration**
3. **Controls**
4. **Security**
5. **Caching**
6. **Error Message Handle**
7. **UI – CSS, Page Templates**

Remoting Configurations

1. **Activation Type (Client, Singlecall, Singleton)**

2. **Registration**
3. **Appropriate use - (synchronous, asynchronous)**

Appendix B

DODD Secure Entitlements Management System

DODD had several challenges in the security space: Lack of automated user provision/de-provision and associated paper process; exposure of web applications due to lack of perimeter network; outdated proprietary authentication which causes multiple accounts and role bloat. DODD developed the Secure Entitlements Management System (SEMS) project to address these issues. Goals for the project were to: Improve application security; Increase efficiency of administration; Increase visibility of security access; Move the environment toward web security standards; Promote efficient uses of identity information and provide a reasonable path for adoption.

The SEMS project used a three-pronged approach leveraging federated token technology, implementing improved perimeter security, and deploying an identity management system that enables the user community for self-service and addresses the inefficiencies noted above. Additionally, DODD was able to implement claims based authentication for their application suite without refactoring code by utilizing this universal security approach.

To implement SEMS, DODD leveraged the Microsoft security platform (Active Directory/Active Directory Federation Services, Forefront Identity Manager and Unified Access Gateway.

Project Narrative

The Ohio Department of Developmental Disabilities provides services and systems to those who serve the Developmentally Disabled (DD) community within the State of Ohio. Much of the focus of the IT organization at DODD is to develop systems to enable Counties and other Providers to be more effective in their services to these individuals. DODD has provided Internet-accessible systems in support of this responsibility for more than 10 years and has continued to increase their capabilities and capacity.

During the development of these early applications the choice was made to develop a propriety application security system for all applications and to store all pertinent user data and application roles in a SQL Server database. This was quite an ingenious approach and served the Agency well for many years. However, the system was somewhat rigid, was unique to DODD, had scalability issues, and had some fundamental security flaws. With the prospect of new systems that depend on open standards such as directory services, Kerberos, and/or federated tokens, the system began to lose its appeal followed by the realization that the system must be modernized and expanded.

In addition to the proprietary nature of the security system there was also an aging and time-consuming process of handling paper requests for the granting of access to the systems. Major difficulties had been identified in the ability to translate paper request forms into granted permissions while also understanding who has the authority to approve a request. Therefore the reduction, and eventual elimination, of paper processing must be a part of any replacement project.

FEDERATED TOKENS

The first challenge, and therefore the first phase of the process, was to facilitate logon to the new SharePoint portal while maintaining access to classic applications which depended upon the proprietary

security system. DODD chose to deploy Active Directory Domain Services (AD) to store user data and to deploy Active Directory Federation Services (ADFS) to facilitate logon from the Internet. A Forefront Identity Manager (FIM) synchronization process was also implemented to keep the SQL data and AD data in sync. This enabled native capabilities of the new portal allowing user access through federated tokens and managing access to secure content. However, it did not natively enable access to the DODD classic ASP.Net applications. For that the project team was able to leverage ADFS to query the classic SQL system and produce a claim value that represented the classic security system's session token. By logging into the portal first this provided a seamless experience for all classic application users. This ability to support the legacy system was a major milestone and allowed DODD to avoid a very large system re-write process for the various classic applications.

PERIMETER SECURITY GATEWAY

The next hurdle was to begin to segment the web environment both logically and physically. Traditionally DODD had no specific perimeter network but used load balancers to enable web servers to be accessed from the outside. DODD introduced Forefront Unified Access Gateway (UAG) servers to secure connections to application servers on the internal network and prevent direct contact to web application servers. UAG has the unique capability to integrate with the federated environment and use claim values to enable, or prevent, access to a web application depending on whether the user has a claim to access it. This ability provides a very dynamic security perimeter that integrates with the application entitlements stores, via ADFS, to facilitate access to the applications.

The implementation of the Access Gateway also had the effect of improving application session control for the users. Prior to the implementation of the gateway a user may have browser sessions open for various DODD applications. If they chose to log out of an application they may have other browser sessions that lingered and may remain active. By implementing the gateway as the entry point for all applications a user can be logged out of all sessions with a single logout of the gateway. As important is that, in the case that a user has unknowingly left a session active, which very difficult to control in such a decentralized environment, the gateway will cancel all application session after a configurable period of inactivity.

IDENTITY MANAGEMENT

The last initiatives fall into the area of automating user account management as well as user application access. To achieve this DODD decided to expand the role of the Identity Manager to enable users to request service, be approved for access specific to their business unit, and to manage their own password issues.

In order to achieve the ability to request access and be approved the Identity Manager was leveraged to manage organizational affiliation. With the organizational structure came the ability to associate basic entitlements to users performing specific roles within those organizations and also the ability to assign approvers of access at the business affiliation level. A classic example of this is the having a County Board Superintendent approve a new worker within their County's Board of Developmental Disabilities. While these types of approvals have been accomplished using a paper affidavit, the capability for electronic request and approval has provided an important security control while increasing accuracy and decreasing provisioning time by several orders of magnitude.

An important distinction has been made in the design between the identity management processes and the management of entitlements to applications. The Identity Manager provides the interface to the user, their organizational affiliation, and their general work function. This provides the ability to identify an approver for each person in the system, allow for organizational deprovisioning if applicable, and define a coarse group of entitlements. However, the system intentionally separates the function of assigning the permissions that are associated with the coarse entitlements or job function. This job is the responsibility of the Entitlements Management System (described in the next section). By maintaining this separation the system is able to scale out more easily, facilitate delegation of access management, and promote the potential reuse by other State Agencies or organizations.

Since the great majority of the user population in the DODD security system are external to the DODD organization the processes of enabling and disabling accounts as well as the ability to quickly understand what an account can access are highly important functions of the identity management system. Within the DODD business rules an organization, such as a County Board, must maintain their active status in the system. Likewise they are responsible for all users associated to their organization. Each user affiliated to that organization is then expired or extended based on their organizational affiliation. Any user that is separated from their organization is automatically provisioned from the system. Any individual who is not affiliated to an active organization, such as a parent or guardian, must renew their account on a yearly basis.

The Identity Manager also has the function of providing an overview of the rights a user has been granted. A user's Role Groups reflect the job function that a user performs but also provide a translation mechanism to their specific rights. This is accomplished by Role Groups being shared between the Identity Manager and the Entitlements Manager. The Identity Manager passes updates to membership to the Entitlements Manager while the Entitlements Manager updates the Identity Manager with descriptions of the permissions with which the Role Group has been associated. By examining a user's Role Group descriptions a system owner or administrator can see a detailed description of the permissions the user has been granted. Likewise, by examining the Role Groups as they relate to a given organization it is possible to assess who has access to the organization's data within the DODD systems. This capability of the system satisfies a major requirement for DODD to improve the visibility of user access permissions.

The business drivers behind the need for the Security Automation Project largely were the result of new application infrastructure. These new applications and systems were requiring DODD to house and manage account information from many new types of user types. New types of users meant much greater numbers of accounts and therefore that self-service capabilities must be available, that they be user-friendly, and operate in a timely basis. The self-service capabilities of the system include the ability to request a new account either as an individual or as an associate of an organization, the ability to set or reset one's own password securely and privately, and the ability to update one's own profile information such as name or phone number. All of these capabilities were leveraged through FIM capabilities including the native Self-Service Password Reset available with the product.

ENTITLEMENTS MANAGEMENT

The DODD Entitlements Management System (EMS) provides a means to extend and leverage the Identity Management System to logically Group application permissions across multiple system types. By leveraging the Role Groups mentioned earlier which are shared and updated by the Identity Manager

the EMS can associate an application role or permission such that, by virtue of membership in the Role Group, a user will be granted the application permission(s) that have been associated to that Role Group. The system enumerates the memberships of the user's Role Group and places the user into the appropriate role or permission.

A role or permission granted to a user based on their Role Group membership are referred to as "Managed Roles". This refers to the workflow-based request and approval processes as well as temporal association to an organization in the Identity Manager.

The EMS also has the capability to place a user in an "Unmanaged Role" which are not updated from the Identity Manager but rather are directly associated within the EMS. This provides a temporary "override" for situations where a user or administrator needs to use a particular application. Unmanaged Role memberships are always set with an expiration time when the user is automatically removed from access.

The EMS leverages Forefront Identity Manager to distribute permission updates into application entitlements repositories. FIM is key to EMS for its ability to interface with a wide variety of systems along with native capability to update group object memberships. By establishing a connection to the DODD classic application Security Control System the EMS can assume ownership of any and all roles/permissions within the classic applications. This capability provided an important link between the existing systems and new systems being introduced providing the ability to manage access consistently across both. This also provided a key landmark in, again, avoiding costly system re-writes and eliminating the need to process paper requests. In addition to the SCS system based in SQL Server, the EMS also manages Active Directory groups and Team membership in Dynamics CRM.

The EMS is key in the ability to rationalize the granting of permissions and dynamically keep track of that permission. EMS's capabilities are helping DODD achieve their goal of optimizing roles within all of the organizations that provide services to the State's DD community and thereby improving security and accountability.

SUMMARY

Each of the components in the project provides an important element to achieving DODD's business and technical goals to be more dynamic in the way access is managed to external-facing applications. The use of federated identity, in addition to being natively web compatible, provides a key capability for DODD to leverage cloud infrastructure and platforms in the future. The perimeter gateway provides the means to better protect DODD systems and data while improving security and user experience. The self-help capability of the Identity Manager will save time and money in processing of forms and in password calls to the Help Desk all while improving access visibility and reduction of lingering accounts and rights. Finally the EMS, by extending the capabilities of the Identity Manager, facilitates management of access to multiple applications across many security systems based on organizational affiliation and job function.

Appendix C

DODD

**Sample CB cost
reports (Excel
Spreadsheet) and
guide to preparing
income**

Appendix C

**Please See Enclosed
Spreadsheet**

***THE OHIO DEPARTMENT OF DEVELOPMENTAL
DISABILITIES***

GUIDE TO PREPARING

INCOME

AND

EXPENDITURE

REPORT

**for use by County Boards of
Developmental Disabilities**

to be used starting **January 1, 2012**

Effective: 1/1/11

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Ohio Department of Developmental Disabilities

GUIDE TO PREPARING INCOME AND EXPENDITURE REPORT

Effective January 1, 2012

General Information

Basis of Accounting

Expenditures and revenue must be reported on a cash basis by the county dd board from January 1 through December 31.

Council of Government Activity

Costs incurred by a council of government on behalf of the county dd board are to be included in the county dd board's income and expenditure report. This reporting requirement is to provide a structure using the income and expense report to accumulate all costs associated with an activity so a more accurate accounting can be reported.

Any units of service delivery performed by the council of government on behalf of the county dd board shall also be included in the statistical information in the county dd board's income and expenditure report.

Revenue received directly by a council of government (not coming from the county dd board) on behalf of the county dd board is also to be included in the county dd board's income and expenditure report.

Allowable and Reasonable Costs

In order to be allowable costs, costs must meet the criteria of 2 CFR 225 (herein referred to as OMB Circular A-87); and the Provider Reimbursement Manual, CMS Publication 15-1. The most

significant section of the allowable cost requirement is the “reasonable cost” criteria. In order to be considered reasonable, costs shall not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the decision was made to incur the cost. The reasonableness criteria are particularly important when the governmental entity is predominately federally funded. The hyperlink to the 2 CFR 225 (OMB Circular A-87) website is:

http://www.access.gpo.gov/nara/cfr/waisidx_08/2cfr225_08.html

In determining reasonableness of a given cost, OMB Circular A-87 states that consideration must be given to:

- whether the cost is of a type generally recognized as ordinary and necessary for the operation in performance of the function for which the cost was incurred.
- the restraints or requirements imposed by such factors as sound business practices; arms length transactions; Federal, State, and other laws and regulations; and terms and conditions of the Federal award or entitlement.
- **market prices for comparable goods or services.**
- whether the individuals concerned **acted with prudence** in the circumstances considering their responsibilities to the county dd board, its employees, the **public at large**, and the **Federal Government**.
- significant deviations from the established practices of the county dd board which may unjustifiably increase the Federal awards’ cost.

The Provider Reimbursement Manual, CMS Publication 15-1 provides additional clarification of reasonable costs. This publication states:

2100. PRINCIPLE

All payments to providers of services must be based on the reasonable cost of services covered under title XVIII of the Act and related to the care of beneficiaries or, in the case of acute care hospitals, the prospective payment system (PPS). (See Chapter 28 on PPS.) Reasonable cost includes all necessary and proper costs incurred in rendering the services, subject to principles relating to specific items of revenue and cost.

2102. DEFINITIONS

2102.1 Reasonable Costs.--Reasonable costs of any services are determined in accordance with regulations establishing the method or methods to be used, and the items to be included. Reasonable cost takes into account both direct and indirect costs of providers of services, including normal standby costs. The objective is that under the methods of determining costs, the costs for individuals covered by the program are not borne by others not so covered, and the costs for individuals not so covered are not borne by the program.

Costs may vary from one institution to another because of scope of services, level of care, geographical location, and utilization. It is the intent of the program that providers are reimbursed the actual costs of providing high quality care, regardless of how widely they may vary from provider to provider, except where a particular institution's costs are found to be substantially out of line with other institutions in the same area which are similar in size, scope of services, utilization, and other relevant factors. Utilization, for this purpose, refers not to the provider's occupancy rate but rather to the manner in which the institution is used as determined by the characteristics of the patients treated (i.e., its patient mix - age of patients, type of illness, etc.).

Implicit in the intention that actual costs be paid to the extent they are reasonable is the expectation that the provider seeks to minimize its costs and that its actual costs do not exceed what a prudent and cost conscious buyer pays for a given item or service. (See §2103.) If costs are determined to exceed the level that such buyers incur, in the absence of clear evidence that the higher costs were unavoidable, the excess costs are not reimbursable under the program.

In the event that a provider undergoes bankruptcy proceedings, the program makes payment to the provider based on the reasonable or actual cost of services rendered to Medicare beneficiaries and not on the basis of costs adjusted by bankruptcy arrangements.

2102.2 Costs Related to Patient Care.--These include all necessary and proper costs which are appropriate and helpful in developing and maintaining the operation of patient care facilities and activities. Necessary and proper costs related to patient care are usually costs which are common and accepted occurrences in the field of the provider's activity. They include personnel costs, administrative costs, costs of employee pension plans, normal standby costs, and others. Allowability of costs is subject to the regulations prescribing the treatment of specific items under the Medicare program.

2102.3 Costs Not Related to Patient Care.--Costs **not related** to patient care are costs which are not appropriate or necessary and proper in developing and maintaining the operation of patient care facilities and activities. Costs which are not necessary include costs which usually are not common or accepted occurrences in the field of the provider's activity.

Such costs are not allowable in computing reimbursable costs and include, for example:

- Cost of meals sold to visitors;
- Cost of drugs sold to other than patients;
- Cost of operation of a gift shop;
- Cost of alcoholic beverages furnished to employees or to others regardless of how or where furnished, such as cost of alcoholic beverages furnished at a provider picnic or furnished as a fringe benefit;
- Costs of gifts or donation;
- Costs of entertainment, including tickets to sporting and other entertainment events;
- Cost of personal use of motor vehicles;
- Costs of fines or penalties resulting from violations of Federal, State, or local laws;
- Costs of educational expense for spouses or other dependents of provider of services, their employees or contractors, if they are not active employees of the provider or contractor.
- Cost of meals served to executives that exceed the cost of meals served to ordinary employees due to the use of separate executive dining facilities (capital and capital-related costs), duplicative or additional food service staff (chef, waiters/waitresses, etc.), upgraded or gourmet menus, etc.; and
- Cost of travel incurred in connection with non-patient care related purposes.

Title XIX Program Reasonable Costs

Reasonable costs for county dd boards will be limited to the lower of the county dd board's cost or the cost cap ceiling in most cases. The cost cap ceiling is the higher of 112% of a weighted state-wide average or the rule rate as established in 5123:2-9-12 and 5123:2-9-19 of the Ohio Administrative Code, except for non-Medical transportation services and Targeted Case Management that is limited to a ceiling of the established rate per the Ohio Administrative Code.

Rounding of Numbers

Round figures to the nearest dollar. (\$1.49=\$1.00 and \$1.50=\$2.00).

Submission and Certification of Income and Expense Report/Due Date

Submit all worksheets included in the DODD report packet with the Income and Expense Report. Include a copy of the **County Auditor's YTD Expenditure & Revenue Reports** for the county dd board and a chart of accounts used by the County Auditor. As stipulated in Section 5126.12 (B) (3), Revised Code, DODD must receive the completed Income and Expense Report by April 30 of the subsequent year. Requests for extension in filing the Income and Expense Report must be received by DODD prior to April 30.

Certify the accuracy of the report by the original signature of the county dd board Superintendent on the certification page of the report. Mail this certification page to the:

Ohio Department of Developmental Disabilities
Division of Fiscal Administration

Office of Budget Services
30 E. Broad St. 13th Floor
Columbus, OH 43215-3434.

You may scan the certification page in lieu of sending a hard copy. Please keep the original signed copy on file. E-mail the completed Income and Expense Report to report.coordinator@list.dodd.ohio.gov. Do not send a copy of the Income and Expense Report to the Ohio Department of Job and Family Services – a copy of the Income and Expense Report will be provided to that department by DODD.

Questions

E-mail report.coordinator@list.dodd.ohio.gov to resolve questions concerning the reporting requirements. You will receive an E-mail response to your inquiry.

Audit and Records Retention Requirements

Expenditure and Income Reports are subject to audit by DODD, ODJFS and CMS at their discretion. Records, documentation, and supplemental worksheets used to prepare the report must be kept on file for a period of seven (7) years from the date of receipt of payment from all sources, or for six (6) years following completion and adjudication of any state or federal initiated audit, whichever period of time is longer.

Reporting Overview

This reporting methodology and guide has been designed with several goals in mind. The primary purpose is to provide a consistent method to capture, analyze and publicize annual expenditures and income for each of Ohio's county dd boards. The second purpose is to provide a Medicaid compliant cost-reporting mechanism that will enable DODD to determine Medicaid & non-Medicaid reimbursable cost rates for Medicaid funded services provided by all county dd boards and their contract agencies.

This report has been designed to include those programs most common to the majority of county dd board operations. Some programs and categories of expense specific to a county dd board may not be represented in the Income and Expenditure Report. When this situation occurs, the county dd board will need to develop supplemental worksheets to report these costs and add them to the overall Income and Expense Report in order to meet the requirement to report all cost information. E-mail report.coordinator@list.dodd.ohio.gov if the county dd board representatives are uncertain of how best to represent these additional costs and/or programs.

Allocation of Cost

Direct assignment and statistical allocation are the two methods to be used when completing the Income and Expense Report. While direct assignment is the preferred method to report costs, not all costs can be directly assigned.

When more than one, but not all programs share costs, supplemental worksheets must be prepared to allocate the costs to the specific programs involved, prior to completing the worksheets.

All expenditures reported and allocation methodologies used must be in compliance with OMB Circular A-87 requirements and ASMB C-10. See a synopsis of Non-Federal Reimbursable costs and a hyperlink to this Circular later in this document.

Documentation Requirements

Report all revenue received and expenditures made by the county dd board during calendar year 2011, including appropriate depreciation costs for capital expenditures.

In addition to maintaining all documentation to verify revenues and expenses, keep records that clearly trace or allocate all costs from accounting records to this report.

To avoid submitting extensive supplemental worksheets, organize accounts in a format that facilitates completion of the Income and Expense Report.

Maintain all records needed to verify statistical information reported and to document compliance with CMS publication 15-1, 42 CFR 92, and other state and/or federal regulatory requirements.

Maintain records of any third party payments received for services billed under Medicaid funded programs and procurement records if necessary.

Maintain Usual and Customary Rate (UCR) schedules to demonstrate charges for Medicaid funded services.

Report revenue and expenditures related to services provided by, or on behalf of, the county dd board that were actually received or paid (e.g., co-payments).

Chart of Accounts Requirements

County dd boards are to implement and use the uniform chart of accounts as described in the “Chart of Accounts” section of this Guide.

Schedule A
Summary of Service Costs - By Program

1. Schedule A is organized by accounts (lines) and by program categories (columns). Each account, except Lines 19 through 27, contains a worksheet reference, indicating from what worksheet the information is being carried forward to Schedule A. Verify that all worksheet totals have been entered on the lines on Schedule A.

2. Report the total cost for Community Residential Services “Room and Board” on Line 19, Column L. This amount is manually entered and does not reference a supporting worksheet in the report. **The amount reported here should be the total for all room and board expenses (both Medicaid and non-Medicaid).**

3. Report the total cost for Community Residential Services “Room and Board”, “Environmental Modification/ Equipment”, “Adaptive and Assistive Equipment”, “Respite”, “Homemaker/Personal Care”, “Supported Employment Enclave/Community Equipment Purchase and/or Modifications”, and “Other Waiver Services” on their respective Lines 19 through 25, Column L. Goods and services purchased under the Home Choice Community Transition service should be reported on Schedule A, Line 27 and **should not** be reported anywhere else in the cost report. These amounts are manually entered and are not referenced to a supporting worksheet in the report.

Schedule A - Program Center Definitions:

1. Children’s Programs are subcategorized as:

A. Early Intervention

These services are provided to infants and toddlers who are not enrolled in an approved unit for pre-school children. These programs may be jointly funded and/or operated with other agencies.

B. Pre-School

Refers to a county dd board operated pre-school program for eligible children funded by the Ohio Department of Education. Services may be provided in classroom settings or through home instruction.

C. School-Age

Refers to a county dd board operated program for eligible school-age children funded by the Ohio Department of Education. Services may be provided in classroom settings or through home instruction.

Note: Costs may be allocated to the appropriate Children’s Service Program Center above for educational supports provided to pre-school and school age children who are not placed in county dd board schools, but who attend school elsewhere. These supports could include consultation to staff, nursing services, behavioral supports and recreational and leisure opportunities. Costs may also be allocated for programs operated by the county dd board for which the county dd board is not receiving Ohio Department of Education funding.

2. Adult Programs are subcategorized as:

A. Facility Based Services

Costs incurred providing services related to the following service codes pursuant to O.A.C. 5123:2-9-19 (unless otherwise noted):

ADF – Adult Day Support, IO Waiver, 15 Minute Unit

ADS – Adult Day Support, IO Waiver, Daily Unit

FDF – Adult Day Support, Level One, 15 Minute Unit

FVS – Adult Day Support, Level One, Daily Unit

AVF – Vocational Habilitation, IO Waiver, 15 Minute Unit

AVH – Vocational Habilitation, IO Waiver, Daily Unit

FVF – Vocational Habilitation, Level One, 15 Minute Unit

FVH – Vocational Habilitation, Level One, Daily Unit

AXF – Adult Day Support and Vocational Habilitation, IO Waiver, 15 Minute Unit

AXD – Adult Day Support and Vocational Habilitation, IO Waiver, Daily Unit

FXF – Adult Day Support and Vocational Habilitation, Level One, 15 Minute Unit

FXD – Adult Day Support and Vocational Habilitation, Level One, Daily Unit

AGF–Adult Day Support Provided Through Contract with ODA-Certified Providers, IO Waiver, 15 Minute Unit (O.A.C. 5123:2-9-20)

AGD–Adult Day Support Provided Through Contract with ODA-Certified Providers, IO Waiver, Daily Unit (O.A.C. 5123:2-9-20)

FGF–Adult Day Support Provided Through Contract with ODA-Certified Providers, Level One Waiver, 15 Minute Unit (O.A.C. 5123:2-9-20)

FGD–Adult Day Support Provided Through Contract with ODA-Certified Providers, Level One Waiver, 15 Minute Unit (O.A.C. 5123:2-9-20)

These service codes are for costs incurred for services provided to individuals (including the cost of off-site recreation trips, except transportation costs) enrolled in the county dd board’s Adult Program who were enrolled on a HCBS Waiver administered by DODD and received services funded through Adult Day Support and/or Vocational Habilitation directly from the county dd board. **However, all adult program costs (Medicaid and non-Medicaid) are to be reported.**

‘**Adult Day Support**’ encompasses non-vocational day services needed to assure the optimal functioning of individuals who participate in these activities in a non-residential setting.

Adult Day Support services are available to individuals who are no longer eligible for educational services based on their graduation and /or receipt of a diploma/equivalency certificate and/or their permanent discontinuation of educational services within parameters established by the Ohio Department of Education.

Services take place in a non-residential setting separate from any home or facility in which an individual resides. Services shall normally be made available four or more hours per day on a regularly scheduled basis, for one or more days per week unless provided as an adjunct to other day activities included in an Individual Service Plan (ISP).

ACTIVITIES THAT CONSTITUTE ‘ADULT DAY SUPPORT’

1. **‘Assessment’** that is conducted through formal and informal means for the purpose of developing components of an Individual Service Plan pertaining to the provision of Adult Day Support Services.
2. **‘Personal care’** includes providing supports and supervision in the areas of personal hygiene, eating, communication, mobility, toileting and dressing to ensure an individual’s ability to experience and participate in community living.
3. **‘Skill reinforcement’** includes the implementation of behavioral intervention plans and assistance in the use of communication and mobility devices. Activities also include the reinforcement of skills learned by the individual that are necessary to ensure his/her initial and continued participation in community living, including training in self-determination.
4. **‘Training in self-determination’** includes assisting the individual to develop self-advocacy skills, to exercise his/her civil rights, to exercise control and responsibility over the services he/she receives and to acquire skills that enable him/her to become more independent, productive and integrated within the community.
5. **“Recreation and leisure’** includes supports identified in the individual’s service plan as being therapeutic in nature, rather than merely providing a diversion, and/or as being necessary to assist the individual to develop and/or maintain social relationships and family contacts.

‘Vocational Habilitation’ means services designed to teach and reinforce habilitation concepts related to work including responsibility, attendance, task completion, problem solving, social interaction, motor skill development, and safety.

Vocational Habilitation services are available to individuals who are no longer eligible for educational services based on their graduation and/or receipt of a diploma/equivalency certificate and/or their permanent discontinuation of educational services within parameters established by the Ohio Department of Education.

Vocational Habilitation is provided to eligible waiver enrollees who participate in a work program that meets the criteria for employment of workers with disabilities under certificates at special minimum wage rates issued by the Department of Labor, as required by the Fair Labor Standards Act, and in accordance with the requirements of 29CFR Part 525: Employment of Workers with Disabilities Under Special Certificates.

Services take place in a non-residential setting separate from any home or facility in which an individual resides.

Vocational Habilitation services shall normally be made available four or more hours per day on a regularly scheduled basis, for one or more days per week unless provided as an adjunct to other day activities included in an ISP.

ACTIVITIES THAT CONSTITUTE ‘VOCATIONAL HABILITATION SERVICES’

1. **‘Assessment’** that is conducted through formal and informal means for the purpose of developing a vocational profile. The profile will contain information about the individual’s job preferences; will identify the individual’s strengths, values, interests, abilities, available natural supports and access to transportation; and will include a financial resource and benefits analysis.

2. **‘Ongoing Job Support’** includes direct supervision, telephone monitoring and/or counseling and the provision of some or all of the following supports to promote the individual’s job adjustment and retention.
 - a. Developing a systematic plan of on-the-job instruction and support, including task analyses;

 - b. Assisting the individual to perform activities that result in his/her social integration with disabled and non-disabled employees on the work-site;

 - c. Supporting and training the individual in the use of generic and/or individualized transportation services;

 - d. Providing services and training that assist the individual with problem solving and meeting job-related expectations;

 - e. Assisting the individual to use natural supports and generic community resources;

 - f. Providing training to the individual to maintain current skills, enhance personal hygiene, learn new work skills, attain self-determination goals and improve social skills and/ or modify behaviors that are interfering with the continuation of his/her employment.

 - g. Developing and implementing a plan to assist the individual to transition from his/her vocational setting to supported and/or competitive employment, emphasizing the use of natural supports.

- B. Supported Employment services consist of intensive, ongoing supports that enable participants, for whom competitive employment at or above the minimum wage is unlikely absent the provisions of supports, and who, because of their disabilities need supports, to perform in a regular work setting. Supported employment may include assisting the participant to locate a job or develop a job on behalf of the participant. Supported Employment includes activities needed to sustain paid work by participants, including supervision and training.

Supported Employment and the related costs to provide the service are separated into the following categories – Enclave and Community Employment. **Supported Employment services may not be provided in a segregated site such as a sheltered workshop:**

- Supported Employment-Enclave
Costs incurred providing services related to the following service codes pursuant to O.A.C. 5123:2-9-19 (unless otherwise noted):

ANF – Supported Emp.-Enclave, IO Waiver, 15 Minute Unit

AND – Supported Emp.-Enclave, IO Waiver, Daily Unit

FNF – Supported Emp.-Enclave, Level One, 15 Minute

FND – Supported Emp.-Enclave, Level One, Daily Unit

These service codes are used for services provided to waiver enrollees who work as a team at a single work site of the ‘host’ community business or industry with initial training, supervision and ongoing support provided by specially trained, on-site supervisors. This service may be provided in dispersed enclaves in which individuals with developmental disabilities work as a self-contained unit within a company and are not integrated with non-disabled employees of the company or may be provided through mobile work crews comprised solely of individuals with developmental disabilities operating as distinct units and/or self-contained businesses working in several locations within the community. **However, all Supported Employment-Enclave costs (Medicaid and non-Medicaid) are to be reported.**

- Supported Employment-Community Services

Costs incurred providing services related to the following service codes pursuant to O.A.C. 5123:2-9-19 (unless otherwise noted):

ACO – Supported Emp.-Community, IO Waiver, 15 Minute Unit,

FCO – Supported Emp.-Community, Level One, 15 Minute Unit

These services are provided in integrated community work settings where waiver recipients and persons without disabilities are employed to perform the same or similar work tasks. Supported Employment Community Services may also include services and supports that assist an individual to achieve self-employment through the operation of a business. **However, all Supported Employment-Community costs (Medicaid and non-Medicaid) are to be reported.**

3. MEDICAID ADMINISTRATION

This program center refers to a reimbursement methodology used to draw-down federal funds from the Centers for Medicare and Medicaid Services (CMS) as reimbursement for activities performed by county dd boards for the proper and efficient administration of Medicaid functions. *Medicaid Administrative Claiming Methodology Guide* prepared by DODD contains specific instructions related to use of this cost center.

4. County Board-Operated ICF/MR

Use this program center to report costs associated with services provided in facilities licensed to and operated by the county dd board directly, or through contract, that are certified and funded as ICFs/MR and for which a Medicaid Provider Agreement has been issued by ODJFS to the county dd board.

5. COMMUNITY RESIDENTIAL

Use this program center to report:

- COSTS ASSOCIATED WITH SUPPORTED LIVING PROGRAMS;
- Room, board and cost-to-live supplements provided to individuals participating in the Individual Options (I/O) and Level 1 Waivers;
- All other community residential services not categorized as ICF/MR.

On Line 19, the county dd board should record costs related to room and board / cost to live.

Room and board - room means shelter-type expenses, including all property-related costs such as rental or purchase of real estate (subject to capitalization) and furnishings, maintenance, utilities, and related administrative services; **board** means three meals a day or any other full nutritional regimen. **The amount reported on this line should be the total of all room and board payments (Medicaid and non-Medicaid).**

Environmental accessibility adaptations and/or modifications and supplies means those physical adaptations to the home, required by the individual's ISP, which are necessary to ensure the health, welfare and safety of the individual, or which enable the individual to function with greater independence in the home, and without which, the individual would require institutionalization. Such adaptations may include the installation of ramps and grab-bars, widening of doorways, modification of bathroom facilities, or installation of specialized electric and plumbing systems that are necessary to accommodate the medical equipment and supplies that are necessary for the welfare of the individual. Excluded are those adaptations or improvements to the home that are of general utility, and are not of direct medical or remedial benefit to the individual, such as carpeting, roof repair, central air conditioning, etc. Adaptations that add to the total square footage of the home are excluded from this benefit. All services shall be provided in accordance with applicable state or local building codes.

Costs incurred providing services related to the following service codes pursuant to O.A.C. 5123:2-9-06 (unless otherwise noted):

AVN – Environmental Accessibility Modifications, IO Waiver

FVN – Environmental Accessibility Adaptations, Level One

EVN – Environmental Accessibility Adaptations, Level One Emergency

FAE – Specialized Medical Equipment and Supplies, Level One

EAE – Specialized Medical Equipment and Supplies, Level One Emergency

FPI – Personal Emergency Response System Installation, Level One

EPI – Personal Emergency Response System Installation, Level One Emergency

FPM – Personal Emergency Response System Maintenance, Level One

EPM – Personal Emergency Response System Maintenance, Level One Emergency

Adaptive and assistive equipment (also known as specialized medical equipment and supplies) means specialized medical equipment and supplies that include devices, controls, or appliances, specified in the individual's ISP, which enable individuals to increase their abilities to perform activities of daily living, or to perceive, control, or communicate with the environment in which they live. This service also includes items necessary for life support, ancillary supplies and equipment necessary to the proper functioning of such items, and durable and non-durable medical equipment not available under the Medicaid state plan.

Costs incurred providing services related to the following services codes pursuant to O.A.C. 5123:2-9-09 (unless otherwise noted):

AAE – Adaptive and Assistive Equipment, IO Waiver

Respite means home and community-based services provided to individuals unable to care for themselves, furnished on a short term basis because of the absence or need for relief of those persons normally providing the care, in facilities certified as intermediate care facilities for the mentally retarded (ICFs/MR) or other facilities licensed by the department under section 5123.19 of the Revised Code (institutional respite) or by a friend or family member in their homes or sites of community activities (informal respite).

Costs incurred providing services related to the following service codes pursuant to O.A.C. 5123:2-9-06 (unless otherwise noted):

AIR – Institutional Respite, IO Waiver, Daily Unit

FIR – Institutional Respite, Level One, Daily Unit

EIR – Institutional Respite, Level One Emergency, Daily Unit

AIL – Institutional Respite, DODD Licensed, IO Waiver, Daily Unit

FIL – Institutional Respite, DODD Licensed, Level One, Daily Unit

EIL – Institutional Respite, DODD Licensed, Level One Emergency, Daily Unit

FIN – Informal Respite, Level One, 15 Minute Units

Homemaker / Personal Care means the coordinated provision of a variety of services, supports and supervision necessary for the health and welfare of an individual that enables the individual to live in the community. These are tasks directed at increasing the independence of the individual within his/her home or community. The service includes tasks directed at the individual's immediate environment that are necessitated by his or her physical or mental condition (includes emotional and/or behavioral), and is of a supportive or maintenance type. This service does not include tasks supporting the individual provided through center-based day habilitation. Without this service, alone or in combination with other waiver services, the individual would require institutionalization.

Costs incurred providing services related to the following service codes pursuant to O.A.C. 5123-2-9-06 (unless otherwise noted):

APC – HPC-Routine, Single Staff, IO Waiver, 15 Minute Unit

FPC – HPC-Routine, Single Staff, Level One, 15 Minute Unit

EPC – HPC-Routine, Single Staff, Level One Emergency, 15 Minute Unit

AMW – HPC-Routine, 2 Staff, IO Waiver, 15 Minute Unit

FMW – HPC-Routine, 2 Staff, Level One, 15 Minute Unit

EMW – HPC-Routine, 2 Staff, Level One Emergency, 15 Minute Unit

AMX – HPC-Routine, 3 Staff, IO Waiver, 15 Minute Unit

FMX – HPC-Routine, 3 Staff, Level One, 15 Minute Unit

EMX – HPC-Routine, 3 Staff, Level One Emergency, 15 Minute Unit

AMY – HPC-Routine, 4 Staff, IO Waiver, 15 Minute Unit

FMY – HPC-Routine, 4 Staff, Level One, 15 Minute Unit

EMY – HPC-Routine, 4 Staff, Level One Emergency, 15 Minute Unit

AMZ – HPC-Routine, 5 Staff, IO Waiver, 15 Minute Unit

FMZ – HPC-Routine, 5 Staff, Level One, 15 Minute Unit

EMZ – HPC-Routine, 5 Staff, Level One Emergency, 15 Minute Unit

AOC – HPC – On-Site/On-Call, IO Waiver, 15 Minute Unit

FOC – HPC – On-Site/On-Call, Level One, 15 Minute Unit

EOC – HPC – On-Site/On-Call, Level One Emergency, 15 Minute Unit

AOW– HPC – On-Site/On-Call, 2 Staff, IO Waiver, 15 Minute Unit

FOW– HPC – On-Site/On-Call, 2 Staff, Level One Waiver, 15 Minute Unit

EOW– HPC – On-Site/On-Call, 2 Staff, Level One Emergency, 15 Minute Unit

AOX– HPC – On-Site/On-Call, 3 Staff, IO Waiver, 15 Minute Unit

FOX– HPC – On-Site/On-Call, 3 Staff, Level One Waiver, 15 Minute Unit

EOX– HPC – On-Site/On-Call, 3 Staff, Level One Emergency, 15 Minute Unit

AOY– HPC – On-Site/On-Call, 4 Staff, IO Waiver, 15 Minute Unit

FOY– HPC – On-Site/On-Call, 4 Staff, Level One Waiver, 15 Minute Unit

EOY– HPC – On-Site/On-Call, 4 Staff, Level One Emergency, 15 Minute Unit

AOZ– HPC – On-Site/On-Call, 5 Staff, IO Waiver, 15 Minute Unit

FOZ– HPC – On-Site/On-Call, 5 Staff, Level One Waiver, 15 Minute Unit

EOZ– HPC – On-Site/On-Call, 5 Staff, Level One Emergency, 15 Minute Unit

Include in the HPC cost category the costs the following HPC rate add-ons (if applicable):

Medical Assistance -add on charge applicable only to the HPC-routine rate.

Behavior Support -add on charge applicable only to the HPC routine rate.

Lorain county dd board may continue to provide or subcontract to provide homemaker personal care services for **no more** than the number of individuals it served on July 1, 2005. **Lorain CB is the only county dd board permitted to continue to provide homemaker personal care services.**

Supported Employment Enclave/Community – Equipment Purchase and/or Modification means the purchasing or modifying of equipment that will be retained by the individual on his/her current employment site and/or in other settings. This equipment is deemed to be necessary to enable the individual to access the worksite in which he/she is receiving Supported Employment - Enclave and/or Supported Employment- Community waiver services and is not to be confused with accessibility modifications that employers are required to make under American Disabilities Act.

Costs incurred providing services related to the following service codes pursuant to O.A.C. 5123:2-9-19 (unless otherwise noted):

AEQ – Supported Employment – Enclave and/or Supported Employment Community
Equipment Purchase and/or Modification, IO Waiver

FEQ – Supported Employment – Enclave and/or Supported Employment Community
Equipment Purchase and/or Modification, Level One

Other Available Waiver Services

Costs incurred providing services related to the following services codes:

AIN – Interpreter Services, IO Waiver, 15 Minute Units (OAC 5123:2-9-06)

AMN – Home Delivered Meals, IO Waiver, 15 Minute Units (OAC 5123:2-9-06)

Note: If the county dd board provides “Nutritional Services” and is reimbursed under Service Code ANN, then the county dd board must maintain units for providing nutritional services and must report those units on Schedule B-2, Line 8. Costs associated with nutritional services will be maintained on Worksheet 7-H. The total units should include both Medicaid and non-Medicaid.

Note: If the county dd board provides “Social Work/Counseling Services” and is reimbursed under Service Code ASN, then the county dd board must maintain units for providing social work/counseling services and must report those units on Schedule B-2, Line 7. Costs associated with social work/counseling services will be maintained on Worksheet 7-G. The total units should include both Medicaid and non-Medicaid.

Home Choice Community Transition Services

Costs incurred providing Home Choice Community Transition Services under the Home Choice demonstration grant and the Ohio Home Care Waiver are reported here. The revenue received for these services should be reported in Schedule C, Section IV, Lines 33-34 of the Other Detail Worksheet.

6. FAMILY SUPPORT SERVICES

Refer to O.A.C. 5123:2-1-09, *Family Support Services*, for an identification of services and activities and payment conditions related to this program.

This category also includes any like kind program funded by local money run by the county dd board. Reporting under this category is based on the intent of the use of the money and not on from where the money came. The county dd board may run a like kind program similar to Family Support Services and fund it with local dollars. Those costs would be reported in this category.

7. Service and Support Administration

Service and support administration includes a set of mandated functions to be provided by persons employed by or under subcontract with the county dd board who hold the appropriate certification in accordance with O.A.C. 5123:2-5-02, *Service and support administration registration and certification standards*. Service and support administration supports individuals in determining and pursuing their goals and maintains the individual as the focus while coordinating services across multiple systems.

O.A.C. 5123:2-1-11, *Service and support administration*, defines the county dd boards responsibilities to provide service and support administration and the processes by which an

individual who receives this service is assigned a service and support administrator who functions as a single point of accountability.

8. Non-Federal Reimbursable

OMB Circular A-87 – Cost Principles for State, Local, and Indian Tribal Governments defines unallowable costs; i.e. items of cost that are not allowable to be reimbursed by the Federal government. These costs are reported in a separate column on Schedule A.

This cost center includes Service and Support Administration costs that are performed as required by O.A.C. 5101:3-48-01 but are not reimbursable from the Federal government.

This cost center also includes costs associated with Medicaid Administration functions that are performed and charged to non-reimbursable or partially non-reimbursable activity code.

For a detailed explanation of Service and Support Administration functions see the instructions for Schedule B-4 of this guide.

For a detailed explanation of non-Federal reimbursable costs see the non-Federal reimbursable section of this guide.

Schedule B-1

Allocation Statistics

This schedule requires statistical information specific to the Adult and Children's Programs. It will be used in cost allocation and reimbursement rate calculation.

Section A – Square Footage

This section requires the county dd board to allocate all square footage used by or for the benefit of the categories listed on Schedule A. Information reported on Schedule B-1, Section A will be used to populate the cost allocation methodology of Worksheets 1, Lines 20, 21, 22, and 23; and Worksheet 3, Lines 17, 18, 19, and 20.

Areas shared by more than one type of service should be allocated accordingly. Square footage figures may be calculated from facility blue prints, floor plans or an actual measurement. Common areas are not to be included in the reported square footage.

Note: Allocation of space is usually based upon the percentage of time a space is used by individuals in a program center. Attach separate worksheets detailing the calculations used for any shared allocations.

If the county dd board leases space, the square footage is included on Schedule B-1 if the lease meets the requirements of a capital lease in accordance with Financial Accounting Standards Board No. 13, *Accounting for Leases*. Please see FASB 13, Item 7 of the section titled '*Criteria for Classifying Leases (Other Than Leveraged Leases)*' for the criteria for which a lease would be classified as a capital lease. In essence, a capital lease transfers substantially all of the benefits and risks of ownership to the lessee. FASB 13 states "In a lease that transfers substantially all of the benefits and risks of ownership, the economic effect on the parties is similar, in many respects, to that of an installment purchase." If the lease does not meet the requirements of FASB 13, it is considered an operating lease and is **not** to be included in Schedule B1, Section A. Operating lease costs are to be charged directly to the program that was using the space. See Worksheet 1, Line 6 for a further description of lease requirements.

Allocate square footage to the following categories and service areas:

	DEPARTMENT/AREA	SQUARE FOOTAGE				
		(A)	(B)	(C)	(D)	(E)
		MAC	ADULT	CHILD	GENERAL	TOTAL
1	BUILDING SERVICES					
2	DIETARY SERVICES					
3	PHYSICIAN SERVICES					
4	NURSING SERVICES					
5	SPEECH/AUDIOLOGY					
6	PSYCHOLOGY					
7	OCCUPATIONAL THERAPY					
8	PHYSICAL THERAPY					
9	SOCIAL WORK/COUNSELING					
10	NUTRITIONAL SERVICES					
	TOTAL THERAPY					
11	0-2 AGE CHILDREN					
12	3-5 AGE CHILDREN					
13	6-21 AGE CHILDREN					
14	FACILITY BASED SERVICES					
15	SUPPORTED EMP. - ENCLAVE					
16	SUPPORTED EMP. - COMM EMP.					
17	MEDICAID ADMINISTRATION					
18	COUNTY BOARD OPERATED ICF/MR					
19	COMMUNITY RESIDENTIAL					
20	FAMILY SUPPORT SERVICES					
21	SERVICE AND SUPPORT ADMIN					
22	PROGRAM SUPERVISION					
23	ADMINISTRATION					
24	TRANSPORTATION					
	TOTAL PROGRAM					
25	NON-REIMBURSABLE					
	GRAND TOTAL					

Note: idle capacity, space rented, etc is to be reported on line 25 as stipulated in *Non-Federal Reimbursable* section of this guide, Item 21.

Section B – Attendance Statistics:

Adult Programs

Line 1. Total Individuals Served by Program

Individual Count by Program Area statistical data is requested to be reported for the period January 1 through December 31. When determining the numbers of Individuals by Program Area, count as one, each program attended by the same individual during the reporting period even when the individual attended more than one type of program. As an example, if an adult received Adult Day Support, Supported Employment – Enclave and Supported Employment - Community Services at any time during the reporting period, the county dd board would indicate a 1 in each of the three columns labeled as Facility Based Services (A), Supported Emp Enclave (B) and Supported Emp.- Community Employment (C) on Schedule B-1, Section B. **The total number must include both Medicaid and non-Medicaid.**

Line 2. Days of Attendance (Facility Based Services and Supported Employment – Enclave)

Days of attendance are to be reported. Days of attendance are calculated as follows. If the individual shows up at the workshop, regardless of how long the individual is there, then consider that a day of attendance. **The total number must include both Medicaid and non-Medicaid.**

Line 3. Typical Hours of Service (Facility Based Services and Supported Employment – Enclave)

Report the planned number of hours that an enrollee is under the supervision of facility staff. This will include lunch or breaks for the enrollee if they are supervised by staff.

Line 4. 15 Minute Units (Supported Employment – Community Employment)

Fifteen minutes units will need to be reported for individuals receiving Supported Employment – Community Employment. The 15 minute units are to be calculated as follows. Units of service, for the purposes of this schedule, are to be based on actual delivery time. A unit of service is equivalent to fifteen minutes. Minutes of service provided to a specific eligible individual can be accrued over one calendar day. The number of units is equivalent to the total number of minutes of service provided during the day for a specific individual divided by fifteen plus one additional unit if the remaining number of minutes is eight or greater minutes. **The total number must include both Medicaid and non-Medicaid.**

Example: how to calculate units of service for both Income and Expense Report – statistical reporting and Medicaid reimbursement.

Scenario:

A county dd board employee (from a county dd board in cost of doing business category #1) drives to McDonalds to discuss with the manager of McDonalds how five individuals are performing. Two of the individuals receive Supported Employment – Community Employment assistance and three are not Medicaid eligible. The county dd employee holds a discussion with the McDonalds manager for 15 minutes concerning one individual who is receiving Supported Employment – Community services then has another discussion with the manager that is general in nature about all five of the individuals that lasts 75 minutes.

Units Generated	Units Generated	
for Statistical	for	Amount of

	<u>Reporting Purposes</u>	<u>Reimbursement</u>	<u>Reimbursement</u>
15 Minute Discussion	1	1	\$5.79
			O.A.C. 5123:2-9-19
			Appendix C
75 Minute Discussion	5	2	\$15.06
			(\$7.53 / 5 x 2 x 5units)
			O.A.C. 5123:2-9-19
			Appendix C

Children’s Programs

Line 5. Individuals Served by Program.

Individual Count by Program statistical data is requested to be reported for the period January 1 through December 31. When determining the number of Individuals Count by Program Area, count as one, each program attended by the same individual during the reporting period even when the individual attended more than one type of program. As an example, if a child moved from early intervention to pre-school-at any time during the reporting period, the county dd board would indicate a 1 in each of the programs-the child was in.

Schedule B-2

Quarterly Summary of Units Of Service- Professional Staff

This schedule needs to be prepared by those county dd boards performing professional services to individuals.

Any administrative and planning time related to these services **should not** be included. All units of service are to be reported on a 15-minute basis for the entire reporting period. **The total should include Medicaid and non-Medicaid.**

Units of service, for the purposes of this schedule, are to be based on actual delivery time. A unit of service is equivalent to fifteen minutes. Minutes of service provided to a specific eligible individual can be accrued over one calendar day. The number of units is equivalent to the total number of minutes of service provided during the day for a specific individual divided by fifteen plus one additional unit if the remaining number of minutes is eight or greater minutes.

County dd boards will need to report units of service delivered to adults and children. Children units need to be separated into the following age groups: Early Intervention, Pre-School, and School Age.

Schedule B-3

Quarterly Summary of Transportation Services

This worksheet requires statistical information for the children and adult programs. Transportation records indicating trips to and from the county dd board programs must be maintained by each county dd board for each person transported.

The county dd board will need to convert each program's transportation to one way trips for only county dd board provided transportation and contracted transportation services. For example, if the county dd board maintains a bus fleet to transport individuals to services, those services generate a one-way trip and are reported on Schedule B-3 in Columns (A), (C), (E), and (G). If the county dd board contracts with an outside service for transportation services, those services also generate a one-way trip and is reported on Schedule B-3 in Columns (A), (C), (E), and (G). These costs are not to be included in columns (B), (D), (F) and (H).

If the county dd board paid bus fare, taxi fare, or paid a fee to the individual's family, etc., those costs are to be listed in the appropriate column ((B), (D), (F), or (H)) and on the appropriate line. If the county dd board paid a provider on a per mile basis to transport an individual, those costs are also to be accounted for in the same manner as bus fare and taxi fare. These trips do not generate a one-way trip for statistical reporting purposes.

Transportation units must be maintained by program center and compiled on a monthly basis, then summarized for each quarter for reporting purposes.

The following are scenarios to provide guidance on whether a transportation unit was delivered.

1. An individual is picked-up at his/her residence and is transported to the habilitation center. At the habilitation center, the individual changes vehicles and is transported to his/her enclave.

Under this scenario, the transportation counts as **one trip** as well as the reverse when he/she is transported home.

2. Same scenario as item 1 above first except the individual changes from a vehicle that bills by the trip to one that bills by the mile.

This still counts as **one trip** and **NO** mileage may be counted or paid.

3. The individual is receiving day services at a facility and goes out on a field trip (e.g, shopping trip to the mall) as part of his/her day services.

The transportation is **NOT** counted as a trip as it is part of the day's services.

It is essential that these statistics are accurate.

Schedule B-4 Quarterly Summary of Service and Support Administration Units

Units of service, for purposes of this schedule, are to be separated into two categories as denoted in the grid below. These activities generate units of service for statistical purposes. However, SSA’s also perform other functions that do not generate units for the purposes of statistical reporting (e.g., administrative tasks, professional development, etc.). Only activities that generate units, as detailed in the grid below, should be reported on Schedule B-4. **County dd boards are to include any units generated by a COG under contract with the county dd board in the county dd board’s Schedule B-4.**

Allowable Units (Units generated by performing activities noted with a “check mark” (✓) in Columns (A) and (C) below)

TCM – Medicaid Eligible Individuals

Other SSA Allowable Units – Non-Medicaid Eligible Individuals

Transition Coordination services provided under the Home Choice demonstration grant

SSA Unallowable Units (Units generated by performing activities noted with a “check mark” (✓) in Columns (B) and (D) below)

Note: As described above, there are other activities performed by SSA’s that do not generate units. Those activities are not to be reported on Schedule B-4. Only units produced for the following activities are reported on Schedule B-4. For additional information, see the instructions for Worksheet 9.

For calculation of the unit of service, it must be a full 15 minutes. Successive units of service may be accumulated for an individual throughout a calendar day, totaled and divided by 15 minutes in order to calculate the units for the day. For the last unit of the day, if the calculation results in a number equal to or greater than 8 minutes, one additional unit may be claimed.

	Activities	Allowable Unit	Unallowable Unit	Costs Allowable	Costs Non-Federal Reimbursable
	5101:3-48-01(D)(1) and (2)	(A)	(B)	(C)	(D)

	Activities performed to make arrangements to obtain from therapists and appropriately qualified persons the initial and on-going assessments of need for any medical, educational, social, and other services.	✓		✓	
	Eligibility assessment activities that provide the basis for the recommendation of an individual's need for HCBS waiver services administered by DODD.	✓		✓	
	Activities related to recommending an individual's initial and on-going need for services and associated costs for those individuals eligible for HCBS waiver services administered by DODD	✓		✓	

	Activities 5101:3-48-01(D)(1) and (2)	Allowable Unit (A)	Unallowable Unit (B)	Costs Allowable (C)	Costs Non- Federal Reimbursable (D)
	Activities related to ensuring the active participation of the individual and working with the individual and others to develop goals and identify a course of action to respond to the assessed needs of the individual. These activities result in the development, monitoring, and on-going revision of an individualized service plan (ISP).	✓		✓	
	Activities that help link individuals with medical, social, educational providers and/or other programs and services that are capable of providing needed services.	✓		✓	
	Activities and contacts that are necessary to ensure that the ISP is effectively implemented and adequately addresses the needs of the individual.	✓		✓	
	Conducting quality assurance reviews on behalf	✓		✓	

	of a specific eligible individual and incorporating the results of quality assurance reviews into amendments of an ISP.				
	Reviewing the individual trends and patterns resulting from reports of investigations of unusual incidents and MUIs and integrating prevention plans into amendments of an ISP.	✓		✓	
	Ensuring that services are provided in accordance with the ISP and ISP services are effectively coordinated through communication with service providers.	✓		✓	
	Activities and contacts that are necessary to ensure that guardians and individuals receive appropriate notification and communication related to unusual incidents and MUIs.	✓		✓	
	Activities performed to assist an individual in preparing for a state hearing related to the reduction, termination or denial of a service on an ISP.	✓		✓	
	Activities performed on behalf of an individual residing in an institution except for the last one hundred eighty consecutive days of residence when the activities are related to moving the individual from an institution to a non-institutional community setting.	✓		✓	
	Emergency intervention services as described in paragraph (Q) of rule 5123:2-1-11 of the Administrative Code.		✓		✓

	Activities 5101:3-48-01(D)(1) and (2)	Allowable Unit (A)	Unallowable Unit (B)	Costs Allowable (C)	Costs Non- Federal Reimbursable (D)
	Conducting investigations of abuse, neglect, unusual incidents, or major unusual incidents. (Note: This is exclusively a Medicaid Administration Claiming activity and should not be performed by an SSA)		✓		✓
	The provision of direct services (medical, educational, vocational, transportation, or social services) to which the eligible individual has been referred.		✓		✓
	Services provided to individuals who have been determined to not have mental retardation or another developmental disability		✓		✓
	Conducting quality assurance systems reviews		✓		✓
	Conducting quality assurance reviews for an individual for whom the service and support administrator serves as the single point of accountability.		✓		✓

	Establishing budgets for services outside of the scope of individual assessment and care planning.		✓		✓
	Activities related to the development monitoring or implementation of an individualized education program (IEP).		✓		✓
	Services provided to groups		✓		✓
	Habilitation management		✓		✓
	Eligibility determinations for CBDD services		✓		✓

Schedule C

Income Report

Enter on each line actual revenue received from January 1 through December 31.

I. Revenue Received from the County:

A. Tax Levy (excludes capital improvements)

Sections 5705.19(L) and 5705.222, Revised Code allows counties to raise money specifically for county dd boards by placing a levy that is outside the 10 mill county limitation. The amount reported here should reflect operating levies. Capital levies should be reported in Section VI, Item A.

II. State revenue (mostly received from the Ohio Department of Developmental Disabilities)

A. Family Support Services

Funding received from the DODD to provide funding to parents and families to assist in maintaining their child in the family home.

B. County Board Subsidy (501)

Funding received for early childhood services and adult services provided under section 5126.05 of the Revised Code, service and support administration provided under section 5126.15 of the Revised Code, or supported living as defined in section 5126.01 of the Revised Code.

C. Residential Facility – Non-Waiver Services

Funding received for room & board, non-waiver services, and expansion of community residential services per the resolution passed when the board agreed to administer former the Residential Facility Waiver.

D. Sermak Waiver Administration

Funding received for waiver administration services provided to individuals identified in the Sermak class action law suit

E. Waiver Administration Subsidy

Funding received for waiver administration services.

F. Broadview (Cuyahoga / Lorain)

Funding received for residential services for former residents of the Broadview Developmental Center

G. Tax Equity

Funding for tax-poor counties that must be used on home and community-based Medicaid waivers.

H. Purchase of Service

Funding received for the former POS program.

I. State-Funded DODD Waiver

Funding received for HCBS waiver services completely paid for by the Department of DD (e.g., Martin, Sermak, XICF, DCTW, etc.). **The match portion of any 100% payment received by the county dd board should be reported here. The federal portion should be reported in Section IV, Item B, Medicaid Cluster-CFDA 93.778-HCBS.**

J. ICFMR

Funding received for Intermediate Care Facilities for the Mentally Retarded when the CB operates an ICFMR. **The match portion of any 100% payment (including any add-ons) received by the county dd board should be reported here. The federal portion should be reported in Section IV, Item D, Medicaid Cluster-CFDA 93.778-ICFMR.**

K. Ohio Home Care

Funding received for the Ohio Home Care Waiver. **The match portion of any 100% payment received by the county dd board should be reported here. The federal portion should be reported in Section IV, Item E, Medicaid Cluster-CFDA 93.778-Ohio Home Care.**

L. Active Treatment for State-Operated Developmental Centers

Funding received from a state-operated developmental center for active treatment provided to individuals residing in a state-operated developmental center.

III. Department of Education

A. Pre-School and Supervision Units

Funding from the Office of Special Education Programs passed through ODE to provide Early Childhood Special Education unit allocation for preschool teachers and ancillary personnel for pre-school aged.

B. School Age

Funding received from ODE to help defer cost for the county dd board activities for eligible school-age children, including classroom settings and itinerant services.

C. Special Education Transportation

Funding received from ODE to help defer the cost of transporting school age children.

IV. Federal Programs

A. Title XIX – Medicaid Cluster – CFDA 93.778 – Targeted Case Management

Medicaid funding for case management services provided to eligible individuals. **Only the federal portion should be reported here. The match portion of the payment is a reconciling item since it is a refund of locally-paid funds.**

B. Title XIX – Medicaid Cluster – CFDA 93.778 – HCBS

Medicaid funding for home and community-based waiver services. **Only the federal portion should be reported here. If a match portion is received for a state-funded waiver (e.g., Martin, Sermak, XICF, DCTW, Ohio Home Care, etc.), it should be reported in Section II, Item I.**

C. Title XIX – Medicaid Cluster – CFDA 93.778 – Medicaid Administration - FFP

Medicaid funding for the Medicaid Administrative Claiming program.

D. Title XIX – Medicaid Cluster – CFDA 93.778 – ICFMR

Medicaid funding for Intermediate Care Facilities for the Mentally-Retarded. **Only the federal portion should be reported here. The match portion of the payment should be reported in Section II, Item J.**

E. Title XIX – Medicaid Cluster – CFDA 93.778 – Ohio Home Care

Medicaid funding for the Ohio Home Care waiver. **Only the federal portion should be reported here. The match portion of the payment should be reported in Section II, Item K.**

F. Title XX - Social Services Block Grant – CFDA 93.667

Title XX grant funding passed through DODD from ODJFS.

G. Title XXI – SCHIP – CFDA 93.767

Medicaid funding for State Children’s Health Insurance Program services provided to eligible individuals. **Only the federal portion should be reported here. The match portion of the payment is a reconciling item since it is a refund of locally-paid funds.**

H. IDEA Part B – CFDA 84.027

Funding from ODE to help ensure that all children with disabilities have available to them a free and appropriate public education (FAPE), ensure the rights of children with disabilities and their parents or guardians are protected, provide assistance to educational entities to educate children with disabilities and assess the effectiveness of efforts to educate such children.

I. Early Childhood Special Education – CFDA 84.173

Funding received from ODE to assist educational entities with providing special education and related services to pre-school aged children with disabilities.

J. Innovative Programs – Title V – CFDA 84.298

Funding from ODE to support local educational reform efforts that are consistent with the statewide educational reform efforts, implementation of promising reform programs based on scientifically based research and provide sources of innovation and educational improvement.

K. PASRR

Funding received through the PASSPORT Waiver for carrying out-mandated preadmission screening requirements.

L. National School Lunch Program – CFDA 10.555

Funding received from the US Department of Agriculture to provide school lunches to children.

M. Preschool Disability Grant– CFDA 84.027

Funding received from ODE to assist in providing special education and related services needed to make a free appropriate public education available to all children with disabilities.

N. Rehabilitation Services

Funding received from the Ohio Rehabilitative Services Commission for the provision of services for eligible individuals (including the Bridges to Transition program). **If part of the payment is a return of local match previously provided to RSC, then that portion of the payment would be a reconciling item and would not be reported here. To prevent duplication of costs, any match paid to RSC that is ultimately returned to the county dd board is also be a reconciling item as the cost of providing the services would already be included in the cost report.**

O. Help Me Grow – Part C – CFDA 84.181A

Funding passed from USDOE through ODH for an Ohio Family and Children First initiative that is designed to implement requirements of IDEA, Part C under 34 CFR, Part 303 to maintain and implement a statewide, comprehensive, coordinated multidisciplinary interagency system of early intervention services for infants and toddlers, and their families.

P. Help Me Grow – TANF – CFDA 93.558

Federal money passed from USHHS through ODJFS earmarked for Temporary Assistance for Needy Families (TANF). These funds follow federal and local requirements as specified by the county PRC plan and the ODH Help Me Grow Administrative Use of Funds Policy.

Note: Federal revenue received under the Home Choice demonstration grant should be reported in Section IV, Lines 33-34 of the Other Detail Worksheet.

V. Other Revenues

A. Food Services (all except adult programs)

Receipts from reimbursement for lunches.

B. Food Services (adult programs)

Receipts from reimbursement for lunches.

C. Donations

Receipts from local donations from private individuals and businesses.

D. Family Support Service Fees

Fees for the provision of family resource services.

E. Transportation Program Income-Adult Services

Receipts from the operation of transportation services such as fares or cost reimbursements to the county dd board from individuals or their families who received services.

F. Transportation Program Income-Children Services

Receipts from the operation of transportation services such as fares or cost reimbursements to the county dd board from individuals or their families who received services.

G. Active Treatment Fees from private ICFsMR

Funding received directly from private ICFsMR for day programming services. These funds would represent negotiated funding arrangements with private ICFsMR for the provision of day programming to the private ICFsMR residents. The amount reported here should not include any funding received as the operator of an ICFMR or any funding received from a state-operated developmental center. Those funds should be reported appropriately in Sections II and IV above.

H. Refunds

Miscellaneous local receipts.

VI. Capital Revenue

A. County Construction Levies

Sections 5705.19(L) and 5705.222, Revised Code allows counties to raise money specifically for county dd boards by placing a levy that is outside the 10 mill county limitation. The amount reported here should reflect capital levies. Operating levies should be reported in Section I, Item A.

B. State Construction Reimbursement

Funding received from DODD to be used for the purchase, renovation, and construction of community adult facilities and early childhood and family centers.

C. Vehicle Purchase Subsidy

Funding received from ODE to assist county dd boards in purchasing buses for the transportation of individuals.

D. Capital Housing

Funding received from DODD for the development of affordable housing for individuals in a supported living setting.

Worksheet 1

Capital Costs

Use this worksheet to report depreciation charged for all equipment, both fixed and movable, regardless of whether it is owned by the county government and/or county dd board.

All equipment having an actual or estimated cost of five thousand dollars or more and a useful life of more than one year according to the *2008 AHA Chart of Useful Lives* must be set up in an asset ledger and depreciated using a straight-line method of depreciation. Assets with a cost of the lesser of the capitalization level established by the governmental unit or five thousand dollars (\$5,000) may be expensed in the year of acquisition per OMB. Circular A-87, Attachment B, Item 15(a)(2).

Starting in reporting period 2007, all assets purchased and placed into operation must use an acceptable straight-line method of depreciation calculation and report a full period's (period is defined as yearly, semiannual, quarterly, or monthly) depreciation cost in the period of disposition and no depreciation cost in the period of acquisition. Assets purchased and placed into operation prior to 2007 may continue using the prior depreciation methodology until fully depreciated and disposed. Depreciation costs for assets dedicated for use for all programs must be allocated using the following method: if the assets are shared by two or more programs, but not all programs, a supplemental worksheet must be prepared using the best available statistic to allocate depreciation costs to the programs involved.

When depreciable assets with salvage value are disposed of an adjustment will be necessary in the county dd board's allowable cost. The amount of loss to be included on the Income and Expense Report is limited to the non-depreciated basis of the asset. The loss should be handled in the same manner as was the depreciation. Gains should be used to offset depreciation in the current year.

In order to determine capital costs to be reported on Worksheet 1 and substantiate that determination, each county dd board must establish and maintain an ongoing record or ledger of asset acquisition and placed in service and depreciation calculation. It is essential the asset records be organized by all applicable program categories listed on Schedule A when used in all or more than one program. Further organization within each program should be by category of asset: Land, Land Improvements, Buildings, Building Fixtures and Improvements and Major Movable Equipment. The asset record or ledger must be structured to include asset description, asset number corresponding to the tagged asset, purchase date, useful life, historical cost, salvage value (minimum 10%), current depreciation amount calculated using the straight-line method and accumulated depreciation amount.

Any equipment or modifications provided to individuals under DODD waivers or the Supported Living program should not be reported here since they are not to be depreciated. Only capital costs associated with the administration of waivers and Supported Living

programs and assets remaining the property of the county dd board or county are to be reported.

Capital housing should be listed as an Asset Inventory and Depreciation expense and should be reported on Worksheet 1, Line 3, Column (X). Housing purchased and/or renovated using Community Assistance Funds, in accordance with O.A.C. 5123:1-1, should be listed in this manner, even if the housing was purchased through a consortium. The county dd board shall follow the Provider Reimbursement Manual, CMS Publication 15-1, Chapter 1, Section 100 for depreciation calculation requirements. Note: if the capital property is leased, the county dd board should refer to Chapter 1, Section, 110, Item B *Lease Purchase Agreements – Rental Charges* for clarification of how to record the transactions.

Divide assets into the following categories:

- **Line 1 – Land (input blocked)**

When land is purchased by the county dd board, do not include the cost of the land on this worksheet. The cost of land used in the operation of county dd board programs cannot be depreciated for Income and Expenditure Report reporting purposes. Consequently, the line on which to enter data is restricted on the Income and Expense Report. The purchase of land is an allowable expenditure as specified in OMB Circular A-87, Attachment B, Item 15 only when prior Federal cognizant approval has been obtained.

The cost of the land should be reported on the Reconciliation to County Auditor worksheet as a reconciling item in the expenditure section.

- **Line 2 – Land Improvements**

Depreciation for land improvements is an allowable cost and includes, but is not limited to, all land attachments, paving, fencing, water and sewer lines, and landscaping. Depreciation of land improvements is an allowable expense in accordance with OMB Circular A-87, Attachment B, Item 15. However, land improvements that materially increase the value or useful life of the land (\$5,000) are only allowable as a direct cost when prior approval is received from CMS as specified in OMB Circular A-87, Attachment B, Item 15.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs
- (X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total (automatically calculated and entered)

- **Line 3 – Building Improvements**

Depreciation for all building improvements is an allowable cost and includes all attachments, improvements and replacement to buildings. Such assets are permanent in nature and in a fixed location. Building improvements would include the installation of a sprinkler system, heating, ventilation and central air conditioning systems. Generally, if the addition increases the value of the building, it is considered to be an improvement.

Depreciation of building improvements is an allowable expense in accordance with OMB Circular A-87, Attachment B, Item 15, over their appropriate useful life. However, if the building improvements materially increase the value or useful life of the building (\$5,000) it is only allowable as a direct cost when prior approval is received from CMS as specified in OMB Circular A-87, Attachment B, Item 15.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs

- (V) – Administration Costs
- (W) – Program Supervision Costs
- (X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total (automatically calculated and entered)

- **Line 4 – Fixtures**

Depreciation for fixtures is an allowable cost and includes all assets that are permanent in nature and in a fixed location. These would include major plumbing work, electrical systems upgrades or a roof replacement. Generally, if it repairs part of an asset already in the building or an attachment thereto, it is a fixture. Depreciation of fixtures is an allowable expense in accordance with OMB Circular A-87, Attachment B, Item 11.

Expenditures made for fixtures are allowable, as specified in OMB Circular A-87, Attachment B, Item 15. However, if the fixture materially increases the value or useful life of the asset (\$5,000) it is only allowable as a direct cost when prior approval is received from CMS as specified in OMB Circular A-87, Attachment B, Item 15.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs

- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs
- (X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total (automatically calculated and entered)

- **Line 5 – Movable Equipment**

Depreciation for movable equipment is an allowable cost and includes any movable assets, such as office equipment, medical equipment, furniture, maintenance equipment, and dietary equipment. It is defined as an article of nonexpendable, tangible personal property having a useful life of more than one year and an acquisition cost which equals the lesser of (a) the capitalization level established by the governmental unit for financial statement purposes, or (b) \$5,000 or more as established in OMB Circular A-87, Attachment B, Item 15.

Items of equipment with an acquisition cost of less than \$5,000 are considered to be supplies and are chargeable as direct costs without pre-approval by CMS as stipulated in OMB Circular A-87, Attachment B, Item 15.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age

- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs
- (X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total (automatically calculated and entered)

- **Line 6 – Capital Leases**

Rented buildings and equipment that are capitalized must be reported on this worksheet and assigned or allocated on the same basis as depreciation for assets owned by the county dd board. These assets are required to be treated as capital leases in accordance with Statement of Financial Accounting Standard No. 13, *Accounting for Leases*.

FASB 13 states “In a lease that transfers substantially all of the benefits and risks of ownership, the economic effect on the parties is similar, in many respects, to that of an installment purchase.” Please see FASB 13, Item 7 of the section titled ‘*Criteria for Classifying Leases (Other Than Leveraged Leases)*’ for the criteria for which a lease would be classified as a capital lease. If the

leased property is something other than real property (i.e., equipment), the following questions must be asked in order to determine the criteria to be applied:

- does the lease transfer ownership by the end of the lease term, or
- does the lease contain a bargain purchase price with the lease terms.
- is the lease term 75% or more of the property's estimated remaining economic life, or
- is the present value of the minimum lease payments 90% or more of the property's fair market value.

If any of the above criteria is met, the lease is considered a capital lease; otherwise it is considered an operating lease.

If the property being leased is real property, the following criteria must be applied:

- does the lease transfer ownership by the end of the lease term, or
- does the lease contain a bargain purchase price with the lease terms.

If neither of the above two criteria are met and, if the lease includes both building and land, the county dd board must determine if the land portion of the lease is material. If the fair value of the land is less than 25% of the total fair value of the property at the inception of the lease, the land is considered immaterial. Consequently, the county dd board should consider the lease to be a single unit when applying the below criteria. If the fair value of the land is 25% or greater of the total fair value of the property at the inception of the lease, the land is considered to be material and the county dd board must consider the land portion and building portion of the lease as separate leases for the purposes of apply the below criteria:

- if the lease term is 75% or more of the property's estimated remaining economic life, or
- if the present value of the minimum lease payments are 90% or more of the property's fair value

If these criteria are met, the lease is considered a capital lease. Otherwise, it is considered an operating lease.

Interest costs related to capital leases are allowable to the extent they meet the criteria in OMB Circular A-87, Attachment B, Item 23.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs
- (X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total (automatically calculated and entered)

- **Line 7 – Other**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Any expenditure charged to the Other capital cost center shall

be supported by a detailed transaction listing which shall be submitted to DODD along with the Income and Expenditure Report.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs
- (X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total (automatically calculated and entered)

- **Line 8 – COG Expenses**

This line represents the county dd board’s allocation of COG capital costs. The information is summarized by the COG on the county dd board’s summary sheet.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs
- (X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total (automatically calculated and entered)

- **Line 9 – Total SSA Costs**

This line represents the total of Lines 2 through 8.

Columns Not Available for Entry Because Formula Driven:

(N) – Service and Support Administration Costs

- **Line 10 – Allocation SSA Costs**

This line is the allocation of the Total SSA Costs reported on Line 9, Column (N) proportionally to the SSA units charged listed in Lines 17, 18, and 19. These are costs that may include some Non-Federal Reimbursable costs as defined in the instruction for Schedule B-4. These costs must be equitably allocated across the allowable SSA costs and Non-Federal Reimbursable cost categories. Without using the above described allocation methodology, the costs could not be readily identified with those categories without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87 and 5101:3-48-01(D).

Columns Not Available for Entry Because Formula Driven:

(N) – Service and Support Administration Costs

(O) – Non-Federal Reimbursable Costs

- **Line 11 – Total General Expense**

This line represents the total of Lines 2 through 7.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs Costs

- **Line 12. – Allocation General Expense**

This line is the allocation of the total reported on Line 11, Column (X) proportionally to the square feet reported on lines 20 and 21. These are costs that benefit more than one cost center and must be equitably allocated across the appropriate categories. Without using the above described allocation methodology, the costs cannot be readily identified with a cost center without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

- (D) – Unassigned Children Program Costs
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs

- **Line 13 – Allocation of MAC Costs**

Line 13 is the allocation of MAC Capital Costs reported on Line 12, Column (I) based on the proportion of allowable and non-federal reimbursable MAC salaries and fringes as reported on WS6. The allocation methodology is automatically calculated on lines 24 through 29.

- **Line 14 – Total Unassigned Costs**

This line represents the total of Lines 2 through 8 plus Line 12.

Columns Not Available for Entry Because Formula Driven:

- (D) – Unassigned Children Program Costs
- (H) – Unassigned Adult Program Costs

- **Line 15 – Allocation Unassigned Costs**

Line 15, Columns (A), (B), and (C) are the allocation of the total reported on Line 14, Column (D) using the square feet reported on Lines 22 & 23. These are children's program costs that benefit more than one of the children's programs. Therefore, these costs must be allocated across the

program areas of early intervention, pre-school, and school age. These costs cannot be readily identified with a particular children's program sub-center without effort disproportionate to the results achieved.

Line 15, Columns (E), (F), and (G) are the allocation of the total reported on Line 14, Column (H) using the square feet reported on Lines 22 & 23. These are adult program costs that benefit more than one of the adult service programs. Therefore, these costs must be allocated across the facility-based and supported employment sub-categories. These costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment

- **Line 16 – Total Capital Costs**

This line represents the total direct charged costs plus any allocated portion of costs.

Not Available for Entry, Automatically Calculated and/or Entered, Columns:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave

- (G) – Adult Program, Supported Employment, Community Employment
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration Costs
- (W) – Program Supervision Costs
- (Z) – Total

These amounts are transferred to Schedule A, Line 1.

- **Lines 17, 18, & 19 – Allocation Methodology of SSA Costs (automatically calculated & entered)**
To allocate SSA costs reported on Line 9, Column (N), units as reported on Schedule B-4 are automatically entered here. Adequate documentation must be maintained to support the units reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

- **Lines 20 & 21 – Allocation Methodology of General Expenses (automatically entered & calculated)**

To allocate general expenses reported on Line 11, Column (X), square feet usage as reported in Schedule B-1, Section A is automatically entered for the cost center areas. Adequate documentation must be maintained to support the square footage numbers. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

- **Lines 22 & 23 – Allocation Methodology of Unassigned Costs (automatically entered & calculated)**

To allocate unassigned costs reported on Line 14, Columns (D) and (H), square feet usage as reported on Schedule B-1, Section A is automatically entered for the cost center areas. Adequate documentation must be maintained to support the square footage numbers. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Lines 24, 25, 26, 27, 28, & 29 – Allocation Methodology of MAC

Lines 24 through 29 are used to allocate the MAC capital costs, reported on Line 12, Column (I) proportionally between allowable MAC activities, Line 13, Column (I) and the non-federal reimbursable MAC activities Line 13, Column (O) as reported on WS6. WS6 amounts automatically populate this schedule. It is necessary that total capital costs include a MAC allocation; however, not all of the MAC allocation consists of allowable MAC activities.

Worksheet 2

Indirect Costs

Indirect costs are calculated by allocating county dd board costs to all programs based on accumulated cost. Costs reported here should be limited to general management costs for the entire county dd board. In addition, indirect costs for general county services that are allowable General Government Expenses as defined in OMB Circular A-87, Appendix B, Item 19 **that are actually paid by the county dd board** should be recorded on this worksheet to be allocated across all cost categories. If those general county services costs are not paid by the county dd board, the costs shall not be included on this worksheet. **See description of Line 10 for additional information on fees paid to the county auditor and treasurer and other non-federal reimbursable costs.**

- **Line 1 - Salaries**

Only Line 1, Column (X) is available for entry. These are personnel that perform duties that cannot be directly assignable to a specific program by the nature of the duty and responsibility.

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance, including but not necessarily limited to, wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on this worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board **may utilize position titles that differ** from the classifications listed below when the functions of the individuals whose costs are reported on this work sheet are substantially similar to the functions of individuals in the classification series selected.

Common Position Title	Civil Service Classification	Series Number
	General	
Superintendent	Superintendent	3091
Assistant Superintendent	Superintendent	3091
Administrative Assistant	Administrative Assistant	6312
Office Assistant	Office Assistant	1251
Secretary	Secretary	1255
	Business Office	
Comptroller	Business Administrator	6331
Business Administrator	Business Administrator	6331
Business Manager	Business Operations Mgr.	6339
Operations Manager	Business Operations Mgr.	6339
Accountant	Accountant/Examiner	6611
Fiscal Officer	Fiscal Officer	6653
Payroll Officer	Fiscal Officer	6653

Account Clerk	Account Clerk	1651
Billing Clerk	Account Clerk	1651
Payroll Clerk	Clerk	1211
General Clerk	Clerk	1211
	Information Systems	
Information Systems Director	Data Systems Management	6413
Program Manager	Information Technology	6411
Programmer	Programmer Specialist	6414
Programmer Technician	Programmer/Analyst	6411
Data Base Administrator	Project Manager	6338
Data Base Analyst	Data Base Analyst	6415
Web Master	Systems Programmer	6419
	Legal Services	
Attorney	Attorney	6384
Paralegal/Legal Assistant	Paralegal/Legal Assistant	6381
	Personnel/Human Resources	
Human Resources Director	Human Resources Manager	6463
Personnel Officer	Personnel Officer	6462
Personnel Clerk	Clerk	1211
Human Resources Officer	Human Resources	6466
Labor Relations Officer	Labor Relations Specialist	6341
EEO/FMLA/Workers' Comp Mgr.	EEO Officer	6913
	Public Information/Communication	
Public Information Officer	Public Information	6442
Editor	Public Information	6442
Graphics Designer	Graphic Artist	8211
Volunteer Coordinator	Volunteer Coordinator	6557
Receptionist	Clerk	1211
Telephone Operator	Telephone Operator	1213
	Training	
Training Coordinator	Training Supervisor	6465
Trainer	Training Officer	6465

Columns Available to have Information Entered:

(X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

(X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

• **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Columns Available to have Information Entered:

(X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Only costs that are not directly attributable to any other cost center may be reported here. Expenditures charged to the Other will consist of:

- miscellaneous office supplies,
- miscellaneous hardware supplies,
- Internet service,
- postage,
- fax and copier supplies,
- custodial supplies,
- trash disposal costs,
- miscellaneous office equipment,
- miscellaneous office equipment repair costs,
- refreshments for meetings, conferences, etc (in accordance with OMB Circular A-87, Attachment B, Item 13).
- conference registration costs,
- miscellaneous lodging and travel costs not directly chargeable to a specific program,

- land-line telephone service costs,
- mobile phone costs not directly chargeable to a specific program,
- membership dues,
- miscellaneous software costs,
- employee recognition costs.

Columns Available to have Information Entered:

(O) – Non-Federal Reimbursable

(X) – General Expense-All Programs Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 5 – COG Expenses**

This line represents the county dd board’s allocation of COG indirect costs. The information is summarized by the COG on the county dd board’s summary sheet.

- **Line 6 – Capital Costs (automatically entered from WS1, Column (V), Line 16)**

Capital costs mean the cost of the asset including the cost to put it in place. Capital costs for equipment means the net invoice price of the equipment, including the cost of any modifications, attachments, accessories, or auxiliary apparatus necessary to make it usable for the purpose for which it is acquired. Ancillary charges, such as taxes, duty, protective in transit insurance, freight, and installation may be included in, or excluded from, capital expenditure cost in accordance with the governmental unit's regular accounting practices. In addition capital costs mean buildings, land, and improvements to buildings or land that materially increase their value or useful life. The costs are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 15.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs Costs – (from WS 1, Line 16, Column (V))

(Z) – Total

- **Line 7 – Building Service (automatically entered from WS3, Column (V), Line 13)**

Building service costs mean the costs to perform such functions as housekeeping, maintenance, non-capitalized repairs, and utilities. These costs are allowable to the extent they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 15.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs Costs – (from WS 3, Line 13, Column (V))

(Z) – Total

- **Line 8 – Total General Expense**

This line represents the total of 1 through 7.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs Costs

- **Line 9 – Allocation General Expense**

This line is the allocation of the Total General Expense reported on Line 8, Column (X) proportionally to the costs reported on lines 14 and 15. These are costs that benefit more than one cost center and must be equitably allocated across the appropriate categories. Without using the above described allocation methodology, these costs cannot be readily identified with a cost center without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

(D) – Unassigned Children Program Costs

(H) – Unassigned Adult Program Costs

(I) – Medicaid Administration Costs

(K) – County Board Operated ICF/MR Costs

(L) – Community Residential Costs

(M) – Family Support Services Costs

(N) – Service and Support Administration Costs

(O) – Non-Federal Reimbursable Costs

(X) – General Expense –All Programs (allocated to Therapy Services that report square footage on Schedule B-1, Section A

- **Line 10 – Unallowable Fees**

The 1 ½% DODD Administration & Oversight Fees that are paid to the DODD as required by Section 5123.0412 must be reported in Column (O), Non-Federal Reimbursable Costs.

The below fees shall be reported on Line 10, Column (O) because they more closely relate to the operations of the county dd board at the county level.

Auditor and Treasurer fees associated with the collection of levy money is Non-Federal Reimbursable because the fees support levy activities. Consequently, those fees must be reported in Column (O), Non-Federal Reimbursable Costs.

Auditor and Treasurer fees for the collection of property taxes is Non-Federal Reimbursable because those fees are associated with the property tax function as stipulated in CMS Publication 15-1, Section 2156.1. Consequently, those fees must be reported in Column (O), Non-Federal Reimbursable Costs.

Other General Government Expenses as defined in this guide's chapter titled Non-Federal Reimbursable definition section, Item 19 in the back of this guide.

Contingent fees paid a consultant (such as a percentage of what is collected from the Federal government). These fees are unallowable in accordance with OMB Circular A-87, Attachment B, Item 32. Consequently, those fees must be reported in Column (O), Non-Federal Reimbursable Costs.

Columns Available to have Information Entered:

(O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 11 – Total Unassigned Costs**

This line represents the Total Unassigned Costs.

Columns Not Available for Entry Because Formula Driven:

(D) – Unassigned Children Program Costs – (from Line 9)

(H) – Unassigned Adult Program Costs – (from Line 9)

- **Line 12 – Allocation Unassigned Costs**

Line 12, Columns (A), (B), and (C) are the allocation of the total reported on Line 11, Column (D) using the costs reported on Lines 16 & 17. Children’s program costs that benefit more than one of the children’s programs must be allocated across the age sub-categories of 0-2, 3-5, and 6-21. Without using the above described allocation methodology, these costs cannot be readily identified with a particular children’s program sub-center without effort disproportionate to the results achieved.

Line 12, Columns (E), (F), and (G) are the allocation of the total reported on Line 11, Column (H) using the costs reported on Lines 16 & 17. Adult program costs that benefit more than one of the adult service programs must be allocated across the facility-based and supported employment sub-categories. Without using the above described allocation methodology, these costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment

- **Line 13 – Total Indirect Costs**

This line represents the Total Indirect Cost and is the sum of the direct entry of Non-Federal Reimbursable and the allocated General Expenses.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention

- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (Z) – Total

- **Lines 14 & 15 – Allocation Methodology of General Expenses (automatically entered & calculated)**

Accumulated costs are used to allocate general expenses reported on Line 8, Column (X). The basis for the accumulated cost is the sum of Worksheet 2A, Line 18, plus Worksheet 2A, Line 14, plus Worksheet 8, Line 12.

Note: the Worksheet 2, Line 15, Column (X) – Total, plus the Worksheet 2, Line 13, Column (Z) – Total should equal Schedule A, Line 28, Column (Z) less Schedule A Line 27, Column (Z) – Total.

- **Lines 16 & 17 – Allocation Methodology of Unassigned Costs (automatically entered & calculated)**

Accumulated costs are used to allocate unassigned costs reported on Line 11, Columns (D) and (H). This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Worksheet 2A Program Supervision

Program Supervision is defined as program support and general services required to maintain and facilitate direct service programs. Only costs associated **above the first level of supervision** are to be reported on this worksheet. This worksheet should be completed after Worksheets 4 through 10 have been completed.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance including, but not necessarily limited to, wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

If an employee performs program supervision of direct service staff **above** the first level of supervision, those costs are to be reported on this worksheet. The first level of supervision is considered direct services.

If an employee performs program supervision and also provides direct services, his/her time must be allocated between this worksheet and the appropriate direct service based on time sheets or time studies to substantiate the percentage of time devoted to each area.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on this worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed when the functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of support staff whose duties are directly dedicated to program supervision on this worksheet.

Common Position Title	Civil Service Classification	Series Number
	Adult Services	
Floor Supervisor	Registered Service Adult Service Worker	3121
Enclave Supervisor	Registered Service Adult Service Worker	3121

Mobile Work Crew Super.	Registered Service Adult Service Worker	3121
Production Manager	Adult Services Manager 1	3125
Asst. Production Manager	Adult Services Manager 1	3125
Job Placement Supr.	Adult Services Manager 2	3125
Adult Services Coordinator	Adult Services Manager 2	3126
Adult Services Director	Adult Services Manager 3	3127
Habilitation Manager	Adult Services Manager 2	3126
Habilitation Supervisor	Adult Services Manager 2	3126
Workshop Director	Adult Services Mgr. 2	3126
Assistant Workshop Director	Adult Services Mgr. 2	3126
Adult Services Director	Adult Services Mgr. 2	3126
Asst. Adult Services Director	Adult Services Mgr. 2	3126
Plant Manager	Adult Services Mgr. 2	3126
	Service & Support Administration	
Case Management/SSA Supr	Case Manager 2	3212
Case Management/SSA Dir.	Case Manager 3	3212
	Children's Services	
Early Intervention Super.	Intervention Specialist Supervisor	3024
Principal	Principal	3102
Assistant Principal	Principal	3102
	Residential Services	
Program Director	Program Director	6171
Residential Supervisor	MR Unit Manager	6528
Residential Director	Institutional Superintendent	6141

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- miscellaneous office supplies,
- miscellaneous hardware supplies,
- postage,
- fax and copier supplies,
- miscellaneous office equipment repair costs,
- conference registration costs,
- miscellaneous lodging and travel costs not directly chargeable to a specific program.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 5 – COG Expenses**

This line represents the county dd board’s allocation of COG program supervision costs. The information is summarized by the COG on the county dd board’s summary sheet.

- **Line 6 – Capital Costs (automatically entered from WS 1, Column (W), Line 16)**

Capital costs mean the costs of the asset, including the cost to put it in place. Capital costs for equipment means the net invoice price of the equipment, including the cost of any modifications, attachments, accessories, or auxiliary apparatus necessary to make it usable for the purpose for which it is acquired. Ancillary charges, such as taxes, duty, protective in transit insurance, freight, and installation may be included in, or excluded from, capital expenditure cost in accordance with the governmental unit's regular accounting practices. In addition capital costs mean buildings, land, and improvements to buildings or land that materially increase their value or useful life. The costs are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 15.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs Costs – (from WS 1, Line 16, Column (W))

(Z) – Total

- **Line 7 – Building Service (automatically entered from WS 3, Column (W), Line 13)**

Building service costs mean the costs to perform such functions such as housekeeping, maintenance, non-capitalized repairs, and utilities. These costs are allowable to the extent they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 25.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs Costs – (from WS 3, Line 13, Column (W))

(Z) – Total

- **Line 8 – Total SSA Costs**

This line represents the total of lines 1 through 5.

Columns Not Available for Entry Because Formula Driven:

(N) – Service and Support Administration Costs

- **Line 9 – Allocation SSA Costs**

This line is the allocation of the SSA Costs reported on Line 8, Column (N) proportionally to the SSA units charged listed in lines 15, 16, and 17. These are costs that may include some Non-Federal Reimbursable costs as defined in the instructions for Schedule B-4. These costs must be equitably allocated across the allowable SSA costs and Non-Federal Reimbursable cost categories. Without using the above described allocation methodology, these costs cannot be readily identified with those categories without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87 and 5101:3-48-01(D).

Columns Not Available for Entry Because Formula Driven:

(N) – Service and Support Administration Costs

(O) – Non-Federal Reimbursable Costs

- **Line 10 – Total General Expense**

This line represents the total of lines 6 and 7.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs Costs

- **Line 11 – Allocation General Expense**

This line is the allocation of the Total General Expense reported on Line 10, Column (X) proportionally to the costs reported on lines 18 and 19. These are costs that benefit more than one cost center and must be equitably allocated across the appropriate categories. Without using the above described allocation methodology, these costs cannot be readily identified with a cost center without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

(D) – Unassigned Children Program Costs

- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs

- **Line 12 – Total Unassigned Costs**
This line represents the Total Unassigned Costs.

Columns Not Available for Entry Because Formula Driven:

- (D) – Unassigned Children Program Costs – (from Line 11)
- (H) – Unassigned Adult Program Costs – (from Line 11)

- **Line 13 – Allocation Unassigned Costs**
Line 13, Columns (A), (B), and (C) are the allocation of the total reported on Line 12, Column (D) using the costs reported on lines 20 & 21. Children’s program costs that benefit more than one of the children’s programs must be allocated across the program categories of early intervention, pre-school, and school age. Without using the above described allocation methodology, these costs cannot be readily identified with particular children’s program sub-center without effort disproportionate to the results achieved.

Line 13, Columns (E), (F), and (G) are the allocation of the total reported on Line 12, Column (H) using the costs reported on lines 20 & 21. Adult program costs that benefit more than one of the adult service programs must be allocated across the facility-based and supported employment sub-categories. Without using the above described allocation methodology, these costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment

- **Line 14 – Total Program Supervision**

This line represents the Total Program Supervision Cost and is the sum of the direct entry and the allocated general expenses and SSA costs.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs

(U) – Transportation Costs

(Z) – Total

- **Lines 15, 16, & 17 – Allocation Methodology of SSA Costs (automatically calculated & entered)**

Used to allocate SSA costs reported on Line 8, Column (N), units reported on Schedule B-4 will be entered here. Adequate documentation must be maintained to support the units reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

- **Lines 18 & 19 – Allocation Methodology of General Expenses (automatically entered & calculated)**

Accumulated costs are used to allocate general expenses reported on Line 10, Column (X). The basis for the accumulated costs is the sum of all the other worksheets for the appropriate cost center. An example of how to build the accumulated cost number for Community Residential, Line 18, Column (L) it would be the sum of:

Worksheet 1 – Capital Costs, Community Residential, Line 16, Column (L)

Worksheet 3 – Building Service Costs, Community Residential, Line 13, Column (L)

Worksheet 4 – Dietary Costs, Community Residential, Line 9, Column (L)

Worksheet 5 – Direct Service Costs, Community Residential, Line 8, Column (L)

Worksheet 6 – Medicaid Administration Costs, Community Residential, Line 9, Column (L)

Worksheet 7A – Physician Service Costs, Community Residential, Line 10, Column (L)

Worksheet 7B – Nursing Service Costs, Community Residential, Line 10, Column (L)

Worksheet 7C – Speech/Audiology Services Costs, Community Residential, Line 10, Column (L)

Worksheet 7D – Psychological Services Costs, Community Residential, Line 10, Column (L)

Worksheet 7E – Occupational therapy Service Costs, Community Residential, Line 10, Column (L)

Worksheet 7F – Physical Therapy Costs, Community Residential, Line 10, Column (L)

Worksheet 7G – Social Work/Counseling Services Costs, Community Residential, Line 10, Column (L)

Worksheet 7H – Nutritional Services Costs, Community Residential, Line 10, Column (L)

Worksheet 9 – Service & Support Admin Services costs, Community Residential, Line 8, Column (L)

Worksheet 10 – Adult Programs, Community Residential, Line 8, Column (L)

Note: The accumulated costs total for transportation is the total of Worksheet 8, Lines 1-7, Column (Z) less Worksheet 8, Non-Federal Reimbursable, Line 12, Column (O). This ensures that the transportation cost center receives the appropriate share of allocated program supervision costs.

Note: Line 18, Column (X) plus Line 14, Column (Z) should equal Worksheet 2, Line 18, Column (X)

- **Lines 20 & 21 – Allocation Methodology of Unassigned Costs (automatically entered & calculated)**

Accumulated costs are used to allocate unassigned costs reported on Line 12, Columns (D) and (H). The same methodology to accumulate the cost as was used for line 18 above is used for line 20. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Worksheet 3

Building Service Costs

This form should be used to report all building service costs such as housekeeping, maintenance and non-capitalized repairs, and utilities.

Shared Buildings

If a building houses multiple programs and/or it houses other direct or indirect service areas, it will be necessary to allocate building service costs to the various areas based on square footage used by each.

Shared Areas

If an area within any building is shared by more than one program, that area and the building service costs associated with it must be allocated based on the ratio of identified square footage assigned exclusively to the programs involved or by actual time the area is used by each program.

Separate Buildings

If a county dd board operates more than one building, a separate worksheet similar to Worksheet 3 should be completed for each building. The supplemental worksheets are to be combined and summarized on Worksheet 3.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance including, but not necessarily limited to, wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on this Worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed when the functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of clerical and other support staff whose duties are directly dedicated to Building Services on this worksheet.

Common Position Title	Civil Service Classification	Series Number
Building Supervisor	Building Maintenance Supervisor	5313
Maintenance Supervisor	Building Maintenance Supervisor	5313
Maintenance Worker	Maintenance Repair Worker	5311
Groundskeeper	Groundskeeper	5361
Custodian	Custodial Worker	4211
Janitor	Custodial Worker	4211
Housekeeper	Housekeeping Mgr.	4211

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration

(W) – Program Supervision

(X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

• **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(D) – Unassigned Children Program Costs

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

(H) – Unassigned Adult Program Costs

(I) – Medicaid Administration Costs

(K) – County Board Operated ICF/MR Costs

(L) – Community Residential Costs

(M) – Family Support Services Costs

(N) – Service and Support Administration Costs

(O) – Non-Federal Reimbursable Costs

- (U) – Transportation Costs
- (V) – Administration
- (W) – Program Supervision
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs

(O) – Non-Federal Reimbursable Costs

(U) – Transportation Costs

(V) – Administration

(W) – Program Supervision

(X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- miscellaneous office supplies,
- miscellaneous hardware supplies,
- Internet service,
- miscellaneous building repair costs,
- land-line telephone service costs,
- mobile phone costs not directly chargeable to a specific program,
- utility costs,
- grounds maintenance costs,
- trash disposal.

Columns Available to have Information Entered:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(D) – Unassigned Children Program Costs

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

(H) – Unassigned Adult Program Costs

- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs
- (U) – Transportation Costs
- (V) – Administration
- (W) – Program Supervision
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 5 – COG Expenses**

This line represents the county dd board’s allocation of COG capital costs. The information is summarized by the COG on the county dd board’s summary sheet.

- **Line 6 – Total SSA Costs**

This line represents the total of Lines 1 through 5.

Columns Not Available for Entry Because Formula Driven:

- (N) – Service and Support Administration Costs

- **Line 7 – Allocation SSA Costs**

This line is the allocation of Line 6, Column (N) proportionally to the SSA units charged listed in lines 14, 15, and 16. These are costs that may include some Non-Federal Reimbursable costs as defined in the instructions for Schedule B-4. These costs must be equitably allocated across the allowable SSA costs and Non-Federal Reimbursable cost categories. Without using the above

described allocation methodology, these costs cannot be readily identified with those categories without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87 and 5101:3-48-01(D).

Columns Not Available for Entry Because Formula Driven:

- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs

- **Line 8 – Total General Expense**

This line represents the total of lines 1 through 5.

Columns Not Available for Entry Because Formula Driven:

- (X) – General Expense-All Programs

- **Line 9 – Allocation General Expense**

This is the allocation of the General Expenses reported on Line 8, Column (X), proportionally to the square footage listed on lines 17 and 18. Adequate documentation must be maintained to support the square footage numbers. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Columns Not Available for Entry Because Formula Driven:

- (D) – Unassigned Children Program Costs
- (H) – Unassigned Adult Program Costs
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (U) – Transportation Costs

(V) – Administration

(W) – Program Supervision

(X) – General Expense –All Programs (allocated to Therapy Services that report square footage on Schedule B-1, Section A

- **Line 10 – Allocation of MAC Costs**

Line 10 is the allocation of MAC Building Services Costs reported on Line 9, Column (I) to the proportion of allowable MAC salaries and fringe to unallowable MAC salaries and fringe as reported on WS6. The allocation methodology is calculated on lines 21 through 26.

- **Line 11 – Total Unassigned Costs**

This line represents the Total Unassigned Costs. It is the total of lines 1 through 4 plus line 9.

Columns Not Available for Entry Because Formula Driven:

(D) – Unassigned Children Program Costs

(H) – Unassigned Adult Program Costs

- **Line 12 – Allocation Unassigned Costs**

Line 12, Columns (A), (B), and (C) are the allocation of the total reported on Line 11, Column (D) using the square footage reported on lines 19 & 20. Children’s program costs that benefit more than one of the children’s programs must be allocated across the program categories of early intervention, pre-school, and school age. Without using the above described allocation methodology, these costs cannot be readily identified with particular children’s program sub-center without effort disproportionate to the results achieved.

Line 12, Columns (E), (F), and (G) are the allocation of the total reported on Line 11, Column (H) using the square footage reported on lines 19 & 20. Adult program costs that benefit more than one of the adult service programs must be allocated across the facility-based and supported employment sub-categories. Without using the above described allocation methodology, these costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment

- **Line 13 – Total Building Service Costs**

This line represents the Total Building Service Costs and is the sum of the direct entry and the allocated general expenses and SSA costs.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (I) – Medicaid Administration Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential Costs
- (M) – Family Support Services Costs
- (N) – Service and Support Administration Costs
- (O) – Non-Federal Reimbursable Costs

- (U) – Transportation Costs
- (V) – Administration
- (W) – Program Supervision
- (Z) – Total

- **Lines 14, 15, & 16 – Allocation Methodology of SSA Costs (automatically calculated & entered)**

Units reported on Schedule B-4 will be used to allocate SSA costs reported on Line 6, Column (N). Adequate documentation must be maintained to support the units reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

- **Lines 17 & 18 – Allocation Methodology of General Expenses (automatically entered & calculated)**

Square feet will be used to allocate general expenses reported on Line 8, Column (X). Square feet usage reported in Schedule B-1, Section A is entered for the cost center areas. Adequate documentation must be maintained to support the square footage numbers. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

- **Lines 19 & 20 – Allocation Methodology of Unassigned Costs (automatically entered & calculated)**

Used to allocate unassigned costs reported on Line 11, Columns (D) and (H), square feet usage reported from Lines 16 and 17 is entered. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Lines 21, 22, 23, 24, 25, & 26 – Allocation Methodology of MAC

Lines 21 through 26 are used to allocate the MAC capital costs, reported on Line 9, Column (I) to a proportionate amount distributed between allowable MAC activities, Line 10, Column (I) and the Non-Federal Reimbursable MAC-like activities Line 10, Column (O) as reported on Worksheet 6. Worksheet 6 amounts automatically populate this schedule. It is necessary that total capital costs include a MAC allocation, however, not all of the MAC allocation consists of allowable MAC activities.

Worksheet 4 Dietary Services Costs

Worksheet 4 is used to report food service costs. There may be different types of food service operations within the county dd board varying from simple vending machine areas to full service cafeteria operations that serve clients, staff or even the general public. Column A through X, Lines 1 through 5 are available for direct entry if costs can be directly assigned to a specific program.

If the food service operation used by county dd board enrollees is operated by the non-profit sheltered workshop that contracts with the county dd board, the related food service costs should not be included in the county dd board's Income and Expenditure Report.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration, paid currently for services rendered during the period of performance including, but not necessarily limited to, wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on this worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed where functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of clerical and other support staff whose duties are directly dedicated to dietary services on this worksheet.

Common Position Title	Civil Service Classification	Series Number
Dietician	Dietician	4242
Food Service Manager	Food Service Management	4241
Food Service Worker	Food Service Worker	4234

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

• **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School

- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Do not include any fees paid, transfers of funds, or payments made to a council of government. Costs of performing dietary services performed by a council of government are recorded on Line 5. Therefore, the recording by a county dd board for any fees paid, transfers of funds, or payments made to the council of government would result in double counting of those costs. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School

- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- cafeteria commodities
- operation license
- miscellaneous hardware supplies
- miscellaneous office supplies
- miscellaneous equipment less than \$5,000
- repairs to equipment

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs

- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 5 – COG Expenses**

This line represents the county dd board’s proportionate share of dietary service costs incurred by the COG on behalf of the county dd board. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

- **Line 6 – Capital Costs (automatically entered from WS1, Column (X), Line 16)**

Capital costs mean the cost of the asset including the cost to put it in place. Capital costs for equipment means the net invoice price of the equipment, including the cost of any modifications, attachments, accessories, or auxiliary apparatus necessary to make it usable for the purpose for which it is acquired. Ancillary charges, such as taxes, duty, protective in transit insurance, freight, and installation may be included in, or excluded from, capital expenditure cost in accordance with the governmental unit’s regular accounting practices. In addition capital costs mean buildings, land, and improvements to buildings or land that materially increase their value or useful life. The costs are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 15.

Columns Not Available for Entry Because Formula Driven:

- (X) – General Expenses-All Programs (from WS 1, Line 16, Column (U))

(Z) – Total

- **Line 7 – Building Service (automatically entered from WS3, Column X, Line 13)**

Building service costs mean the costs to perform such functions such as housekeeping, maintenance, non-capitalized repairs, and utilities. These costs are allowable to the extent they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 25.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expenses-All Programs (from WS 3, Line 13, Column (U))

(Z) – Total

- **Line 8 – Sub Total**

This line represents the total of lines 1 through 5.

Columns Not Available for Entry Because Formula Driven:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(D) – Unassigned Children Program Costs

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

(H) – Unassigned Adult Program Costs

(K) – County Board Operated ICF/MR Costs

(M) – Family Support Services Costs

(O) – Non-Federal Reimbursable Costs

(X) – General Expense-All Programs

(Z) – Total

- **Line 9 – Allocation Unassigned Costs**

Line 7, Columns (A), (B), and (C) are the allocation of the total reported on Line 6, Column (D) using the units reported on lines 10 & 11. Children’s program costs that benefit more than one of the children’s programs must be allocated across the program categories of early intervention, pre-school, and school age. Without using the above described allocation methodology, these costs cannot be readily identified with a particular children’s program sub-center without effort disproportionate to the results achieved.

Line 7, Columns (E), (F), and (G) are the allocation of the total reported on Line 6, Column (H) using the units reported on lines 10 & 11. Adult program costs that benefit more than one of the adult service programs must be allocated across the facility-based and supported employment sub-categories. Without using the above described allocation methodology, these costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

- **Line 10 – Allocation General Expense**

This line represents the allocation of the General Expenses reported on Line 6, Column (X), based on the meals served as reported on lines 12 & 13. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (K) – County Board Operated ICF/MR Costs
- (M) – Family Support Services Costs

- **Line 11 – Total Dietary Costs**

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (K) – County Board Operated ICF/MR Costs
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (Z) – Total

- **Lines 12 & 13 – Units (automatically entered)**

Used to allocate unassigned costs reported on Line 6, Columns (D) and (H). Units reported in Schedule B-1, Section B are entered here. Adequate documentation must be maintained to support the units reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

- **Line 14 & 15 – Meals Served**

Used to allocate general expenses on Line 6, Column (X) and distributes that allocation across the affected programs as detailed on line 8. **Meals served need to be entered on line 14.** Adequate documentation must be maintained to support the meals reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Worksheet 5 Direct Service Costs

This worksheet is to be used to report all costs directly associated with personnel who work directly with individuals (other than adult programs reported in Worksheet 10) to supervise, assist, and develop their educational, work, and habilitation skills. Only costs associated with personnel who work directly with the individuals are to be reported on this worksheet. Lines 1 through 5, Columns (A) through (D) and (K) through (O) are used to directly assigned costs to a specific program. If costs are reported in Lines 1 through 4, Column (D), those costs must be allocable to all of the children programs (early intervention, pre-school, and school age). If such costs are not allocable to all age groups, those costs must be allocated outside of the cost report and placed into the appropriate column.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance including but not necessarily limited to wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Any time spent by supervisory personnel (whether first level or above) performing direct service activities would be considered direct service time for the purpose of Income and Expenditure Reporting and would be included on this worksheet.

Any time spent by first level supervisors performing supervisory activities would be considered direct service activities for the purpose of the Income and Expenditure Report and will be included this worksheet. However, any time spent by supervisors performing supervisory activities above the first level supervision would be considered program supervision and would be included on Worksheet 2A.

Most direct service salary and employee benefit costs should be directly assigned to specific programs. If, in rare instances, direct service salaries and benefits are paid to staff who work in more than one program, the employees involved must keep time sheets to document their actual hours worked in each program.

When employees do share their time between programs, supplemental worksheets should be prepared to allocate direct service salary and benefit costs between the programs based on the ratio of hours worked in each program.

If an employee performs both direct service and administrative duties within the same program, the employee's time sheets would then be used to allocate the employee's salary and benefit costs between the cost categories via supplemental worksheets.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on this worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed when the functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of clerical and other support staff whose duties are directly dedicated to direct services on this worksheet.

Worksheet 5 Direct Services		
Common Position Title	Civil Service Classification	Series Number
	Children's Services	
Intervention Spec. Early Ch	Intervention Spec. Early Child.	3021
Intervention Spec. School	Intervention Spec. School Age	3022
Intervention Spec. Assist	Intervention Spec. Assistant	3020
Intervention Spec. Sub.	Intervention Spec. Substitute	3031
Behavior Managemt. Spec	Behavior Management Specialist	3051
Physical Developmt. Spec	Physical Development Specialist	3061
Teacher	Instructor	3081
Teacher Assistant	Intervention Spec. Assistant	3020
Supportive Home Serv. Spec	Supportive Home Services Spec	3011
Early Intervention Super.	Intervention Specialist Supervisor	3024
Assistant Principal	Principal	3102
	Residential Services/ CB ICF/MR	
Residential Supervisor	Residential Care Worker Supr.	4003
Residential Support Staff	Residential Care Worker 1	4001
Residential Support Staff	Residential Care Worker 2	4002
Program Director	Program Director	6171
Residential Supervisor	MR Unit Manager	6528
Residential Director	Institutional Superintendent	6141
	General	
Investigative Agent	Investigative Agent	3231
Lifeguard	Lifeguard	3221

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential

(M) – Family Support Services Costs

(O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Do not include any fees paid, transfer of funds, or payments made to a council of government. Costs of performing direct services performed by a council of government are recorded on line 5. Therefore, the recording by a county dd board for any fees paid, transfers of funds, or payments made to the council of government would result in double counting of those costs. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

Columns Available to have Information Entered:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(D) – Unassigned Children Program Costs

(K) – County Board Operated ICF/MR Costs

(L) – Community Residential

(M) – Family Support Services Costs

(O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- miscellaneous office supplies,
- miscellaneous hardware supplies,
- advertising costs,
- Internet service,
- postage,
- fax and copier supplies,
- custodial supplies,
- miscellaneous office equipment costs,
- miscellaneous office equipment repair costs,
- conference registration costs,
- miscellaneous lodging and travel costs,
- land-line telephone service costs,
- mobile phone costs,
- membership dues,
- miscellaneous software costs.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 5 – COG Expenses**

This line represents the county dd board’s proportionate share of direct services costs incurred by the COG on behalf of the county dd board. **Note: any fees paid, transfer of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

- **Line 6 – Sub Total**

This line is the total of Lines 1 through 5 for Columns (A) through (D)

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs

- **Line 7 – Allocated Costs**

Line 7, Columns (A), (B), and (C) are the allocation of the total reported on Line 6, Column (D) using the units reported on lines 10 & 11. Children’s program costs that benefit more than one of the children’s programs must be allocated across the program categories of early intervention, pre-school, and school age. Without using the above described allocation methodology, these costs cannot be readily identified with a particular children’s program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age

- **Line 8 – Total Direct Service**

This line represents the total for the Direct Services worksheet.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs
- (Z) – Total

- **Lines 9 & 10 – Units (automatically entered)**

The number of individuals served is used to allocate unassigned costs reported on Line 6, Column (D) and should be reported here. Documentation must be maintained to support the number of individuals served that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Worksheet 6

Medicaid Administration Cost

This worksheet is to be used to report costs of activities performed that are for the “proper and efficient administration” of Medicaid.

- **Line 1 – Salaries**

Payroll costs are an allowable expenditure to the MAC program. Costs charged to the MAC program in the Income and Expenditure Report for payroll is allocated through the time studies. These costs are reimbursed quarterly through the time study methodology. Record payroll costs associated with reimbursable codes, or the allocated portion thereof, in column (I) and record payroll costs associated with non-reimbursable codes, or the allocated portion thereof, in column (O).

The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Note: Report the cost of salaries and benefits of clerical and other support staff whose duties are attributable to Medicaid administration on this worksheet.

Columns Available to have Information Entered:

(I) – Medicaid Administration (costs charged to codes eligible for reimbursement)

(O) – Non-Federal Reimbursable Costs (costs charged to codes not eligible for reimbursement or the non-Federal portion of payroll costs charged to discounted and reallocated codes)

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 2 – Employee Benefits**

Employee benefit (fringe benefits) costs are an allowable expenditure to the MAC program. Costs charged to the MAC program in the Income and Expenditure Report for employee benefits are allocated through the time studies. These costs are reimbursed monthly through the time study

methodology. Record fringe benefit costs associated with reimbursable codes, or the allocated portion thereof, in column (I) and record fringe benefit costs associated with non-reimbursable codes, or the allocated portion thereof, in column (O).

The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

(I) – Medicaid Administration (costs charged to codes eligible for reimbursement)

(O) – Non-Federal Reimbursable Costs (costs charged to codes not eligible for reimbursement)

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 3 – Service Contracts**

Service contract costs are allowable to be charged to the MAC program and may include costs paid to COG or other agencies with whom the county dd board has contracted to perform MAC functions. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Do not include any fees paid, transfers of funds, or payments made to a council of government. Costs of performing MAC activities by a council of government are recorded on Line 5. Therefore, the recording by a county dd board for any fees paid, transfers of funds, or payments made to the council of government would result in double counting of those costs. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

Columns Available to have Information Entered:

(I) – Medicaid Administration (costs charged to codes eligible for reimbursement)

(O) – Non-Federal Reimbursable Costs (costs charged to codes not eligible for reimbursement)

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 4 – Other Expenses (input blocked)**

- **Line 5 – COG Expenses**

This line represents the county dd board’s proportionate share of Medicaid administrative claiming costs incurred by the COG on behalf of the county dd board. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

- **Line 6 – Sub Total**

This line represents the sum of lines 1 through 5.

Columns Not Available for Entry Because Formula Driven:

(I) – Medicaid Administration

(O) – Non-Federal Reimbursable Costs

- **Line 7 – General Expenses (input blocked)**

- **Line 8 – Unassigned Costs (input blocked)**

- **Line 9 – Total Medicaid Administration**

This line represents the total Medicaid administration costs.

Columns Not Available for Entry Because Formula Driven:

(I) – Medicaid Administration

(O) – Non-Federal Reimbursable Costs

(Z) – Total

Worksheets 7A through 7K

Professional Services Costs

These worksheets are used to report costs associated with the delivery of services by licensed or specialized professional staff which includes physicians, nurses, speech therapists and audiologists, psychologists, occupational therapists, physical therapists, clinical social workers/counselors and nutritionists.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance including, but not necessarily limited to, wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on each worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed when the functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of clerical and other support staff whose duties are directly dedicated to professional services on these worksheets.

	Worksheet 7A Physician Services	
Common Position Title	Civil Service Classification	Series Number
Medical Director	Physician	6534
Physician Assistant	Physician Assistant	6532
Psychiatrist	Psychiatrist	6537

Worksheet 7B Nursing Services		
Common Position Title	Civil Service Classification	Series Number
Nurse	Nurse	6551
Nurse	Psychiatric/MR Nurse	6552
Nurse Practitioner	Nurse Practitioner	6563

Worksheet 7C Speech/Audiology		
Common Position Title	Civil Service Classification	Series Number
Speech Therapist	Speech-Language Pathology	4427
Speech Therapist	Communication Skills Specialist	3071
Language Development Spe	Language Development Specialist	44271 C

Worksheet 7D Psychology		
Common Position Title	Civil Service Classification	Series Number
Psychologist Supervisor	Psychologist Supervisor	83315
Psychologist	Psychologist	83313
Psychology Assistant	Psychology Assistant 1	83311
Psychology Assistant	Psychology Assistant 2	83312
School Psychologist	School Psychologist	3041

Worksheet 7E Occupational Therapy		
Common Position Title	Civil Service Classification	Series Number
Occupational Therapist	Occupational Therapist	44311
Occupational Therapist	Occupational Therapy Assistant	44310

Worksheet 7F Physical Therapy		
Common Position Title	Civil Service Classification	Series Number
Physical Therapist	Licensed Physical Therapist	44263
Physical Therapy Assist.	Licensed Physical Therapy Asst.	44261
Physical Therapy Aid	Therapy Aid	44260

Worksheet 7G Social Work/ Counseling		
Common Position Title	Civil Service Classification	Series Number
Social Worker	Social Work Supervisor 1	69315
Social Worker	Social Worker 1	69311
Social Worker	Social Worker 2	69312
Social Worker	Social Worker 3	69313

Worksheet 7H Nutritional Services		
Common Position Title	Civil Service Classification	Series Number
Dietician	Dietician	42423
Dietician Consultant	Dietetic Consultant	42424
Dietician Aid	Dietetic Technician	42420

Columns Available to have Information Entered

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The

costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Do not include any fees paid, transfers of funds, or payments made to a council of government. Costs of performing direct services performed by a council of government are recorded on

Line 5. Therefore, the recording by a county dd board for any fees paid, transfers of funds, or payments made to the council of government would result in double counting of those costs. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- miscellaneous office supplies,
- miscellaneous hardware supplies,
- medical supplies,

- advertising costs,
- Internet service,
- postage,
- fax and copier supplies,
- custodial supplies,
- miscellaneous office equipment costs,
- miscellaneous office equipment repair costs,
- conference registration costs,
- miscellaneous lodging and travel costs,
- land-line telephone service costs,
- mobile phone costs,
- membership dues,
- miscellaneous software costs,

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (L) – Community Residential
- (M) – Family Support Services Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 5 – COG Costs**

This line represents the county dd board’s proportionate share of professional services costs incurred by the COG on behalf of the county dd board. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

- **Line 6 – Capital Costs (automatically entered from WS1, Column (X), Line 16)**

Capital costs mean the cost of the asset including the cost to put it in place. Capital costs for equipment means the net invoice price of the equipment, including the cost of any modifications, attachments, accessories, or auxiliary apparatus necessary to make it usable for the purpose for which it is acquired. Ancillary charges, such as taxes, duty, protective in transit insurance, freight, and installation may be included in, or excluded from, capital expenditure cost in accordance with the governmental unit's regular accounting practices. In addition capital costs mean buildings, land, and improvements to buildings or land that materially increase their value or useful life. The costs are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 15.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expenses-All Programs (from WS 1, Line 16, Column (U))

(Z) – Total

Note: If a county dd board allocates square footage to professional services on Schedule B-1, Section A, Lines 2 through 10, this will allocate capital costs and place those costs on Line 6, Column (X). In order to allocate those costs, the county dd board must report the number of individuals served or units on line 13.

- **Line 7 – Building Service (automatically entered from WS3, Column X, Line 13)**

Building service costs mean the costs to perform such functions such as housekeeping, maintenance, non-capitalized repairs, and utilities. These costs are allowable to the extent they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 25.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expenses-All Programs (from WS 3, Line 13, Column (U))

(Z) – Total

Note: If a county dd board allocates square footage to professional services on Schedule B-1, Section A, Lines 2 through 10, this will allocate building service costs and place those costs on Line 7, Column (X). In order to allocate those costs, the county dd board must report the number of individuals or units served on line 13.

- **Line 8 – Total General Expense**

Column (X) of this line represents the total of General Expenses for Lines 1 through 5, plus Lines 6 and 7.

Columns Not Available for Entry Because Formula Driven:

(X) – General Expense-All Programs

- **Line 9 – Allocation General Expense**

This line is the allocation of the General Expenses total reported on Line 8, Column (X) proportionally to the number of individuals served as reported on Lines 13 and 14. These are costs that benefit more than one cost center and must be equitably allocated across the appropriate categories. Without using the above described allocation methodology, these costs cannot be readily identified with a cost center without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

(D) – Unassigned Children Program Costs

(H) – Unassigned Adult Program Costs

(K) – County Board Operated ICF/MR Costs

(L) – Community Residential

(M) – Family Support Services Costs

- **Line 10 – Total Unassigned and General Costs**

This line represents the total of lines 1 through 5 plus line 9.

Columns Not Available for Entry Because Formula Driven:

(D) – Unassigned Children Program Costs

(H) – Unassigned Adult Program Costs

- **Line 11 – Allocation Unassigned and General**

Line 11, Columns (A), (B), and (C) are the allocation of the total reported on Line 10, Column (D) using the number of individuals/units reported on lines 13 & 14. Children’s program costs that benefit more than one of the children’s programs must be allocated across the program categories of early intervention, pre-school, and school age. Without using the above described allocation methodology, these costs cannot be readily identified with a particular children’s program sub-center without effort disproportionate to the results achieved.

Line 11, Columns (E), (F), and (G) are the allocation of the total reported on Line 10, Column (H) using the units reported on lines 13 & 14. Adult program costs that benefit more than one of the adult service programs must be allocated across the facility-based and supported employment sub-categories. Without using the above described allocation methodology, these costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

- **Line 12 – Total Professional Service**

This line represents the total professional services costs.

Columns Not Available for Entry Because Formula Driven:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

(K) – County Board Operated ICF/MR Costs

(L) – Community Residential

(M) – Family Support Services Costs

(O) – Non-Federal Reimbursable Costs

(Z) – Total

- **Lines 13 & 14 – Number of Individuals Served/Units of Service**

The number of individuals served by cost center/units will need to be entered and reported on line 13 and will be used to allocate general costs reported on Line 6, Column (X). Adequate documentation must be maintained to support the units reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

- **Lines 15 & 16 – Number of Individuals/Units of Service (automatically entered)**

The number of individuals served or the units reported in Schedule B-1, Section B will be entered here (from Line 13) and used to allocate unassigned costs reported on Line 10, Columns (D) and (H). Adequate documentation must be maintained to support the units reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

When completing Worksheets 7A through 7K, all salary, benefit, contractual service costs, and other expenses such as travel, supplies and minor equipment costs associated with the delivery of service are to be reported.

Psychology Services

The following are instructions for reporting PASRR-related psychological assessment costs for individuals applying for or enrolled on the Homecare Waiver that were billed to ODJFS and/or for costs that were billed to DODD as a PASRR service.

1. Report the cost for PASRR-related psychological assessments performed by contracted psychologists on Worksheet 7-D.
2. Report the cost for PASRR-related psychological assessments performed by psychologists employed by the county dd board on Worksheet 7-D as an Adult Program cost. The corresponding units of service should be included on Schedule B-2 as a Non-Medicaid.

Worksheet 8

Transportation Service Costs

This worksheet is used to report all costs associated with the transportation of individuals to county dd board programs. Since most county dd boards operate a centralized transportation service for all programs, most costs will not be directly assigned to a specific program. Lines 1 through 4 are available to enter costs directly assigned to a specific program.

All costs associated with transporting individuals, including contracted transportation services, must be reported. The latter cost is to be reported on line 3. Transportation costs may also include public transportation costs or the costs of reimbursing for private transportation of clients such as bus fares and taxi fares, or pay the individual's family to transport the individual. These costs should be reported as part of Other Expenses on line 4.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance including, but not necessarily limited to, wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on each worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed when the functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of clerical and other support staff whose duties are directly dedicated to transportation services on this worksheet.

Common Position Title	Civil Service Classification	Series Number
Bus Driver	Transportation Service Worker 1	3311
Bus Driver	Transportation Service Worker 2	3312
Transportation Supervisor	Transportation Services Super.	3315
Van Driver	Vehicle Operator	5444
Mechanic	Automotive Mechanic	5213

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The

costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Do not include any fees paid, transfers of funds, or payments made to a council of government. Costs of performing transportation services performed by a council of government are recorded on Line 5. Therefore, the recording by a county dd board for any fees paid, transfers of funds, or payments made to the council of government would result in double counting of those

costs. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- miscellaneous office supplies
- miscellaneous hardware supplies
- miscellaneous vehicle supplies
- miscellaneous vehicle repair
- fuel
- mobile phone costs
- miscellaneous lodging and travel costs
- conference registration costs

- transportation costs for public transportation such as bus fares and taxi fares, or to pay the individual's family to transport the individual

Columns Available to have Information Entered:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (D) – Unassigned Children Program Costs
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (K) – County Board Operated ICF/MR Costs
- (O) – Non-Federal Reimbursable Costs
- (X) – General Expense-All Programs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 5 – COG Costs**

This line represents the county dd board’s proportionate share of transportation services costs incurred by the COG on behalf of the county dd board. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

- **Line 6 – Capital Costs (automatically entered from WS1, Column (U), Line 16)**

Capital costs mean the cost of the asset including the cost to put it in place. Capital costs for equipment means the net invoice price of the equipment, including the cost of any modifications, attachments, accessories, or auxiliary apparatus necessary to make it usable for the purpose for which it is acquired. Ancillary charges, such as taxes, duty, protective in transit insurance, freight, and installation may be included in, or excluded from, capital expenditure cost in accordance with the governmental unit's regular accounting practices. In addition capital costs mean buildings, land, and improvements to buildings or land that materially increase their value or useful life. The costs are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 15.

Columns Available to have Information Entered:

(O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

(X) – General Expenses-All Programs (from WS 1, Line 16, Column (U))

(Z) – Total

- **Line 7 – Building Service (automatically entered from WS3, Column U, Line 13)**

Building service costs mean the costs to perform such functions such as housekeeping, maintenance, non-capitalized repairs, and utilities. These costs are allowable to the extent they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 25.

Columns Available to have Information Entered:

(O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

(X) – General Expenses-All Programs (from WS 3, Line 13, Column (U))

(Z) – Total

- **Line 8 – Program Supervision (automatically entered from WS2A, Column U, Line 14)**
Program Supervision is defined as program support and general services required to maintain and facilitate direct service programs.

Columns Available to have Information Entered:

(O) – Non-Federal Reimbursable Costs

Columns Not Available for Entry Because Formula Driven:

(X) – General Expenses-All Programs (from WS 2A, Line 14, Column (U))

(Z) – Total

- **Line 9 – Subtotal**
This line represents the total of Lines 1 through 8.

Columns Not Available for Entry Because Formula Driven:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(D) – Unassigned Children Program Costs

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

(H) – Unassigned Adult Program Costs

(X) – General Expenses-All Programs

- **Line 10 – Allocation Unassigned Costs**

Line 10, Columns (A), (B), and (C) are the allocation of the total reported on Line 9, Column (D) using the one way trips reported on lines 13 & 14. Children’s program costs that benefit more than one of the children’s programs must be allocated across the program categories of early intervention, pre-school, and school age. Without using the above described allocation methodology, these costs cannot be readily identified with a particular children’s program sub-center without effort disproportionate to the results achieved.

Line 9, Columns (E), (F), and (G) are the allocation of the total reported on Line 9, Column (H) using the one way trips reported on lines 13 & 14. Adult program costs that benefit more than one of the adult service programs must be allocated across the facility-based and supported employment sub-categories. Without using the above described allocation methodology, these costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

(A) – Children Program, Early Intervention

(B) – Children Program, Pre-School

(C) – Children Program, School Age

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

- **Line 11 – Allocation General Expense**

This line is the allocation of the total reported on Line 9, Column (X) proportionally to the number of one way trips reported on lines 15 and 16. These are costs that benefit more than one cost center

and must be equitably allocated across the appropriate categories. Without using the above described allocation methodology, these costs cannot be readily identified with a cost center without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (K) – County Board Operated ICF/MR

- **Line 12 – Total Transportation Service**

This line represents the total transportation costs by program center.

Columns Not Available for Entry Because Formula Driven:

- (A) – Children Program, Early Intervention
- (B) – Children Program, Pre-School
- (C) – Children Program, School Age
- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (K) – County Board Operated ICF/MR Costs
- (O) – Non-Federal Reimbursable Costs
- (Z) – Total

- **Lines 13, 14, 15, & 16 – Number of One Way Trips (automatically entered)**

One way trips comes from the information reported on Schedule B-3 for the associated programs. These trips are used to allocate Line 9, Column (D) – Unassigned Children Programs, Column (H) – Unassigned Adult Programs and Column (X) – General Expenses. This allocation methodology meets the requirements of OMB Circular A-87.

Worksheet 9

Service and Support Administration Costs

This worksheet is used to report all costs associated with providing service and support administration activities by the county dd board to individuals. Lines 1 through 5, Column (N) are available for entry to record costs directly assignable to the SSA program.

REFER TO RULES 5101:3-48-01(D) *MEDICAID COVERAGE OF TARGETED CASE MANAGEMENT SERVICES PROVIDED TO INDIVIDUALS WITH MENTAL RETARDATION AND DEVELOPMENTAL DISABILITIES*, 5123:2-1-11 *SERVICE AND SUPPORT ADMINISTRATION*, AND THE INSTRUCTIONS FOR SCHEDULE B-4 FOR A COMPLETE DESCRIPTION OF THE RESPONSIBILITIES OF THE COUNTY DD BOARD TO REPORT SERVICE AND SUPPORT ADMINISTRATION COSTS AND FOR THE PROCESSES TO BE FOLLOWED FOR INDIVIDUALS TO ACCESS THESE SERVICES.

DODD certified service and support administrator supervisors and certified service and support administrators, or service and support administrators with a conditional status certificate, may provide service and support administration. Any person employed to assist these individuals to provide service and support administration shall have service and support registration from DODD.

Activities performed in item 1 below are federally-reimbursable. Activities performed in item 2 below are required to be performed by the SSAs; however, CMS does not allow federal reimbursement for such activities. Consequently, these costs are allocated and removed from the allowable SSA costs and placed in the Non-Federal Reimbursable category.

1. Allowable SSA Costs:

(a) Targeted Case Management (TCM):

These Medicaid State Plan funded services may be billed as TCM when provided to individuals enrolled on a HCBS waiver administered by DODD, to individuals age three or older who are Medicaid recipients and who are eligible for county dd board services, and to residents of ICFs/MR or nursing facilities within the last 180 days of their stay in these facilities for the purpose of their discharge to the community. Travel and documentation time directly related to performance of above activities are included.

These allowable activities include activities 1 through 12 as detailed in the instructions for Schedule B-4.

(b) Other Allowable SSA Costs:

Activities otherwise defined as TCM, but the individuals are not Medicaid eligible, and therefore, the services should be delivered but not billed.

These allowable activities include activities 1 through 12 as detailed in the instructions for Schedule B-4, plus travel and documentation time directly related to performance of above activities.

BOTH (A) AND (B) ABOVE INCLUDE ACTIVITIES PERFORMED BY THE SSA'S THAT ARE NOT INDIVIDUAL SPECIFIC. THESE ACTIVITIES ARE LISTED BELOW. THESE ACTIVITIES ARE NOT BILLABLE AS TCM AND DO NOT GENERATE A UNIT AS DESCRIBED IN SCHEDULE B-4. HOWEVER, THE COSTS INCURRED BY PERFORMING THESE FUNCTIONS ARE TO BE INCLUDED IN THE SSA COST CENTER. THESE ACTIVITIES INCLUDE:

- Participating in SSA staff meetings;
- Participating in county collaborative meetings;
- Participating in supervisory meetings that are not individual-specific;
- Initiating interagency contacts that are not individual-specific;
- Providing or receiving training directly related to the provision of TCM;
- Reviewing Medicaid and SSA related rules; policies and information notices; conducting quality assurance reviews for the service delivery system or agency;
- Conducting general provider recruitment activities;
- Conducting system-wide reviews of service effectiveness;
- Participation in paid breaks or lunch times;
- Reading and responding to general correspondence; processing paperwork.

(c) Services provided under the Home Choice demonstration grant:

Costs incurred for transition coordination activities provided to individuals as part of the Home Choice demonstration grant are allowable SSA costs. However, TCM **cannot** be billed for these services. Goods and services purchased under the Home Choice Community Transition service should be reported on Schedule A, Line 27 and **should not** be reported anywhere else in the cost report.

2. Unallowable SSA Costs:

This contains costs for SSA activities provided in specific circumstances that cannot be billed as TCM.

These prohibited activities are described in paragraph (D)(2) of ODJFS rule 5101:3-48-01, *Medicaid coverage of targeted case management services provided to individuals with mental retardation and developmental disabilities* and these allowable activities include activities 13 through 23 as detailed in the instructions for Schedule B-4.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance including, but not necessarily limited to, wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Any time spent by supervisory personnel performing direct service activities would be considered direct service time for the purpose of income and expenditure reporting and would be included on this worksheet.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on each worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed when the functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of clerical and other support staff whose duties are directly dedicated to service and support administration activities on this worksheet.

Worksheet 9 Service and Support Administration			
Common Position Title	Civil Service Classification	Series Number	
Case Managmt/SSA Aide	Case Manager Aide	3210	
Case Manager/SSA	Case Manager 1	3211	
Case Manager/SSA	Case Manager 2	3212	
Case Manager/SSA	Case Manager 3	3213	
Case Management/SSA Supr	Case Manager 2	3212 / 3213	Only if used as first level of supervision
Case Management/SSA Dir.	Case Manager 3	3212 / 3213	

Columns Available to have Information Entered:

(N) – Service and Support Administration Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

(N) – Service and Support Administration Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Do not include any fees paid, transfers of funds, or payments made to a council of government. Costs of performing service and support administration services performed by a council of government are recorded on Line 5. Therefore, the recording by a county dd board for any fees paid, transfers of funds, or payments made to the council of government would result in double counting of those costs. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

Columns Available to have Information Entered:

(N) – Service and Support Administration Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- miscellaneous office supplies,
- miscellaneous hardware supplies,
- miscellaneous office equipment,
- miscellaneous office equipment repair costs,
- conference registration costs,
- refreshments for meeting, conferences, etc.
- miscellaneous lodging and travel costs,
- land-line telephone service costs,
- mobile phone costs,
- membership dues.

Columns Available to have Information Entered:

(N) – Service and Support Administration Costs

Columns Not Available for Entry Because Formula Driven:

(Z) – Total

- **Line 5 – COG Expenses**

This line represents the county dd board’s proportionate share of service and support administration services costs incurred by the COG on behalf of the county dd board. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

- **Line 6 – Subtotal SSA Costs**

This line represents the total of lines 1 through 5.

Columns Not Available for Entry Because Formula Driven:

(N) – Service and Support Administration Costs

- **Line 7 – Allocation SSA Costs**

This line allocates the subtotal of SSA costs reported on Line 6, Column (N) proportionally to the SSA units charged listed in Lines 9, 10, and 11. These are costs that may include some Non-Federal Reimbursable costs as defined above and in the instruction for Schedule B-4. These costs must be equitably allocated across the allowable SSA costs and Non-Federal Reimbursable cost categories. Without using the above described allocation methodology, these costs cannot be readily identified with those categories without effort disproportionate to the results achieved. Any costs charged to this line must meet the requirements of OMB Circular A-87 and 5101:3-48-01(D).

Columns Not Available for Entry Because Formula Driven:

(N) – Service and Support Administration Costs

(O) – Non-Federal Reimbursable Costs

- **Line 8 – Total Service and Support Administration Costs (automatically calculated & entered)**

The total of SSA costs (Column (N)) and Non-Federal Reimbursable costs (Column (O)) is reported on this line.

Columns Not Available for Entry Because Formula Driven:

(N) – Service and Support Administration Costs

(O) – Non-Federal Reimbursable Costs

(Z) – Total

- **Lines 9, 10, & 11 – Allocation Methodology of SSA Costs (automatically calculated & entered)**
Units reported on Schedule B-4 will be entered here and used to allocate SSA costs reported on Line 6, Column (N). Adequate documentation must be maintained to support the units reported that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

Worksheet 10

Adult Programs

This worksheet is used to report all costs associated with personnel who work directly with individuals in facility-based services and supported employment (both Enclave and Community Employment) to supervise, assist and develop their educational, work, and habilitation skills. Only costs associated with personnel who work directly with the individuals are to be reported on this worksheet. Lines 1 through 5, Columns (E), (F), (G) and (H) are available for entry to record costs assignable to the adult programs.

- **Line 1 – Salaries**

Compensation for personnel services includes all remuneration paid currently for services rendered during the period of performance, including but not necessarily limited, to wages and salaries. The costs of such compensation are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Any time spent by supervisory personnel (whether first level or above) performing direct service activities would be considered direct service time for the purpose of income and expenditure reporting and would be included on this worksheet.

Any time spent by first level supervisors performing supervisory activities would be considered direct service activities for the purpose of income and expenditure reporting and will be included this worksheet. However, any time spent by supervisors performing supervisory activities above the first level supervision would be considered program supervision and would be included on worksheet 2A.

Most direct service salary and employee benefit costs should be directly assigned to specific programs. If, in rare instances, direct service salaries and benefits are paid to staff who work in more than one program, the employees involved must keep time sheets to document their actual hours worked in each program.

When employees do share their time between programs, supplemental worksheets should be prepared to allocate direct service salary and benefit costs between the programs based on the ratio of hours worked in each program.

If an employee performs both direct service and administrative duties within the same program, the employee's time sheets would then be used to allocate the employee's salary and benefit costs between the cost categories via supplemental worksheets.

Listed below are groups of civil service classification titles authorized through Section 124.01 of the Ohio Revised Code that the DODD considers appropriate for inclusion on this worksheet. It is understood that the county dd board, through the specific authority granted in Section 5126.05 of the Ohio Revised Code, shall authorize all positions of employment for all county dd board employees. As such, the county dd board may utilize position titles that differ from the classifications listed when the functions of the individuals whose costs are reported on this worksheet are substantially similar to the functions of individuals in the classification series selected.

Note: Report the cost of salaries, benefits and associated costs of clerical and other support staff whose duties are directly dedicated to direct services on this worksheet.

Common Position Title	Civil Service Classification	Series Number
Workshop Specialist 1 or 2	Registered Serv. Adult Serv. Wkr	3121
Workshop Specialist Asst.	Registered Serv. Adult Serv. Wkr	3121
Habilitation Technician	Registered Serv. Adult Serv. Wkr	3121
Travel Trainer	Registered Serv. Adult Serv. Wkr	3121
Contract Procurement Spec	Registered Serv. Adult Serv. Wkr	3121
Community Employ. Spec	Registered Serv. Adult Serv. Wkr	3121
Vocational Trainer	Registered Serv. Adult Serv. Wkr	3121
Training Specialist	Registered Serv. Adult Serv. Wkr	3121
Aide	Registered Serv. Adult Serv. Wkr	3121
Job Coach	Registered Serv. Adult Serv. Wkr	3121
Habilitation Specialist 2	Professional Adult Serv. Wkr.	3122
Placement Specialist	Professional Adult Serv. Wkr.	3122
Work Adjustment Spec.	Professional Adult Serv. Wkr.	3122
Vocational Evaluator	Professional Adult Serv. Wkr.	3122
Recreation Specialist	Professional Adult Serv. Wkr.	3122
Rehabilitation Specialist	Professional Adult Serv. Wkr.	3122
Travel Trainer	Professional Adult Serv. Wkr.	3122
Job Coach	Professional Adult Serv. Wkr.	3122
Human Developmt. Spec.	Professional Adult Serv. Wkr.	3122
Behavior Managemt. Spec.	Professional Adult Serv. Wkr.	3122
Floor Supervisor	Registered Serv. Adult Serv. Wkr	3121
Enclave Supervisor	Registered Serv. Adult Serv. Wkr	3121
Mobile Work Crew Super.	Registered Serv. Adult Serv. Wkr	3121
Production Manager	Adult Services Manager 1	3125
Asst. Production Manager	Adult Services Manager 1	3125
Job Placement Supr.	Adult Services Manager 2	3125
Adult Services Coordinator	Adult Services Manager 2	3126
Adult Services Director	Adult Services Manager 3	3127
Habilitation Manager	Adult Services Manager 2	3126
Habilitation Supervisor	Adult Services Manager 2	3126
Workshop Director	Adult Services Mgr. 2	3126
Assistant Workshop Director	Adult Services Mgr. 2	3126
Adult Services Director	Adult Services Mgr. 2	3126
Asst. Adult Services Director	Adult Services Mgr. 2	3126
Plant Manager	Adult Services Mgr. 2	3126

Columns Available to have Information Entered:

- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 2 – Employee Benefits**

Fringe benefits are allowances and services provided by employers to their employees as compensation in addition to regular salaries and wages. Fringe benefits include, but are not limited to, the costs of leave, employee insurance, pensions, and unemployment benefit plans. The costs of fringe benefits are allowable to the extent that the benefits are reasonable and are required by law, governmental unit-employee agreement, or an established policy of the governmental unit. The costs of such benefits are allowable to the extent that they satisfy the specific requirements of OMB Circular A-87, Attachment B, Item 8.

Columns Available to have Information Entered:

- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 3 – Service Contracts**

Contracts entered into by the county dd board to perform functions on behalf of the county dd board. These costs are allowable only if such costs meet the requirements in accordance with OMB Circular A-87.

Do not include any fees paid, transfers of funds, or payments made to a council of government. Costs of performing direct services performed by a council of government are recorded on Line 5. Therefore, the recording by a county dd board for any fees paid, transfers of funds, or payments made to the council of government would result in double counting of those costs. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

Columns Available to have Information Entered:

- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

• **Line 4 – Other Expenses**

Other miscellaneous and ancillary costs are allowable if such costs meet the requirements in accordance with OMB Circular A-87. Expenditures charged to Other will consist of:

- miscellaneous office supplies,
- miscellaneous hardware supplies,
- advertising costs,
- Internet service,
- postage,
- fax and copier supplies,
- custodial supplies,
- miscellaneous office equipment costs,
- miscellaneous office equipment repair costs,
- conference registration costs,
- miscellaneous lodging and travel costs,
- land-line telephone service costs,

- mobile phone costs,
- membership dues,
- miscellaneous software costs.

Columns Available to have Information Entered:

- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs
- (O) – Non-Federal Reimbursable

Columns Not Available for Entry Because Formula Driven:

- (Z) – Total

- **Line 5 – COG Expenses**

This line represents the county dd board’s proportionate share of direct services costs incurred by the COG on behalf of the county dd board. **Note: any fees paid, transfers of funds, or payments made to a council of government would be a reconciling item on the reconciliation to the county auditor worksheet.**

- **Line 6 – Subtotal**

This line represents the total of Lines 1 through 5 for Columns (E), (F) and (G) and Lines 1 through 5 plus Line 6 for Column (H).

Columns Not Available for Entry Because Formula Driven:

- (E) – Adult Program, Facility Based Services
- (F) – Adult Program, Supported Employment, Enclave
- (G) – Adult Program, Supported Employment, Community Employment
- (H) – Unassigned Adult Program Costs

- **Line 7 – Allocated Costs**

Line 7, Columns (E), (F), and (G) are the allocation of the total reported on Line 6, Column (H) using the individuals served reported on lines 9 & 10. These are adult program costs that benefit more than one of the adult service programs and must be allocated across the facility-based and supported employment sub-categories. Without using the above described allocation methodology, these costs cannot be readily identified with a particular adult program sub-center without effort disproportionate to the results achieved.

Columns Not Available for Entry Because Formula Driven:

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

- **Line 8 – Total Adult Program**

This line represents the total adult program direct service cost by cost center.

Columns Not Available for Entry Because Formula Driven:

(E) – Adult Program, Facility Based Services

(F) – Adult Program, Supported Employment, Enclave

(G) – Adult Program, Supported Employment, Community Employment

(O) – Non-Federal Reimbursable

(Z) – Total

- **Lines 9 & 10 –Individuals Served**

The number of individuals served is used to allocate unassigned costs reported on Line 6, Column (H) and should be reported here. Documentation must be maintained to support the number of individuals served that are used for allocation purposes. This methodology meets the definition of allocable costs contained in OMB Circular A-87, Attachment A, Item F.

a1/a2 adult – a3/a4 children
Allocation of Costs/Allocation Statistics

Provider Reimbursement Manual, CMS Publication 15-1 requires allocation of indirect costs to all cost centers.

“Section 2306

Although non-revenue-producing cost centers do not directly produce patient care revenue, they contribute indirectly to patient care revenue generated by "serving" as a service to the revenue-producing centers and also to other non-revenue-producing centers. Therefore, for the purpose of proper matching of revenue and expenses, the cost of the revenue-producing centers should include both its direct expenses and its proportionate share of the costs of each non-revenue-producing center (indirect costs) based on the amount of services received. The process of allocating the cost of a particular non-revenue-producing center to other non-revenue-producing centers and revenue-producing centers is performed by utilizing a set of statistics (e.g., pounds of laundry for allocating "laundry and linen" costs, square feet for allocating "depreciation building" costs).

Every non-revenue-producing cost center has the potential of being allocated to every other non-revenue-producing cost center in addition to the revenue-producing cost centers. This precludes a simple allocation of the direct expense of the non-revenue-producing cost center because the indirect costs derived from allocation of other non-revenue-producing cost centers must be computed in determining the "full cost" (direct and indirect costs) of the non-revenue-producing cost center being allocated. All cost funding methods employ this computation in determining the full costs of departments.

Section 2306.1

Step-Down Method--This method recognizes that services rendered by certain non-revenue-producing departments or centers are utilized by certain other non-revenue-producing centers, as well as by the revenue-producing centers. All costs of non-revenue-producing centers are allocated to all centers which they serve, regardless of whether these centers produce revenue. The cost of the non-revenue-producing center serving the greatest number of other centers is allocated first. Following the allocation of the cost of the non-revenue-producing center, that center will be considered "closed" and no further costs are allocated to that center. This applies even though it may have received some services from a center whose cost is allocated later. Generally, when two centers render service to an equal number of centers while receiving benefits from an equal number, that center which has the greatest amount of expense should be allocated first.”

Reconciliation to County Auditor

Expenditures

The county dd board must reconcile total costs as reported on Schedule A to the county auditor's report of expenditures. Starting with the total costs as reported on Schedule A, the county dd board will need to report necessary adjustments in order to reconcile. Each category of adjustment must be reported on a separate line. The county dd board must maintain records to support each adjustment as stipulated in the *General Information – Audit and Records Retention Requirements – and – Documentation Requirements* Section of this Guide. Common items for which an adjustment would need to be made include but are not limited to:

- Plus: Real estate fees,
- Plus: Personal property fees,
- Plus: Capital housing,
- Plus: Capital improvements,
- Plus: Transfers-out – general,
- Plus: Advance-out – general,
- Plus leases and rentals.
- Plus: Fees paid to COG or, transfers of funds, or payments made to COG
- Plus: Match paid for I/O & LV1 Waivers
- Plus Match paid for TCM
- Less: COG Expenses (automatically entered)

If there is a difference between the amounts reported on Schedule A as compared to the county auditor's report of expenditures, Schedule A shall not exceed the county auditor's total by more than ¼% (.0025) over the county auditor's total.

Revenues

The county dd board must reconcile total revenue as reported on Schedule C to the county auditor's report of revenues. Starting with the total revenue as reported on Schedule C, the county dd board will need to report necessary adjustments in order to reconcile. Each category of adjustment must be reported on a separate line. The county dd board must maintain records to support each adjustment as stipulated in the *General Information – Audit and Records Retention Requirements – and – Documentation Requirements* Section of this Guide. Common items for which an adjustment would need to be made include but are not limited to:

If there is a difference between the amount reported on Schedule C as compared to the county auditor's report of revenue, Schedule C shall not be less than the county auditor's total by more than ¼ % (.0025) under the county auditor's total.

Chart of Accounts Detail

To enhance consistency statewide in preparing the Income and Expenditure Report, county dd boards need to implement the following uniform chart of accounts. This chart of accounts is a systematically arranged list of accounts applicable to the county dd boards, giving account numbers and names. Definitions and descriptions as to what costs are allowed to be entered into the accounts are listed under each worksheet in this guide.

IF YOUR CURRENT ACCOUNTING SYSTEM DETAILS ITS ACCOUNTS TO THE LEVEL LISTED BELOW (OR MORE DETAILED IF NEEDED FOR OPERATIONAL PURPOSES) AND THOSE ACCOUNTS ARE USED FOR THE SAME PURPOSES AS STIPULATED IN THIS GUIDE BASED ON EACH INDIVIDUAL WORKSHEET, THEN YOUR ACCOUNTING SYSTEM WILL NOT NEED TO BE MODIFIED.

The chart of accounts is created using a seven digits code.

<u>Worksheet</u>	<u>Cost</u> <u>Center</u>	<u>Category</u>
01001	01	

Digits one, two, and three identifies the Worksheet:

010	Capital Costs
021	Indirect Cost
022	Program Supervision Cost
030	Building Services Cost
040	Dietary Services Cost
050	Direct Services Cost
060	Medicaid Administration Cost
071	Physician Services Cost
072	Nursing Services Cost
073	Speech/Audiology Cost
074	Psychological Services Cost
075	Occupational Therapy Cost
076	Physical Therapy Cost
077	Social Work/Counseling Cost
078	Nutritional Services Cost
080	Transportation Services Cost
090	Service & Support Administration Cost
100	Adult Program Cost

Digits four and five identifies the Cost Center:

- 01 Children – Early Intervention,
- 02 Children – Pre-School,
- 03 Children – School Age,
- 04 Children – Unassigned Costs,
- 05 Adult – Facility Based Services,
- 06 Adult – Supported Employment – Enclave,
- 07 Adult – Supported Employment – Community Employment,
- 08 Adult – Unassigned Costs,
- 09 Medicaid Administration,
- 10 County Board Operated ICF/MR,
- 11 Community Residential,
- 12 Family Support Services,
- 13 Service & Support Administration,
- 14 Non-Federal Reimbursable Costs,
- 15 Transportation,
- 16 Administration,
- 17 Program Supervision, and
- 18 General Expenses

Digits six and seven identifies the cost Category:

- 01 Salaries,
- 02 Employee Benefits,
- 03 Service Contracts,
- 04 Other Expense,
- 05 Land, Land Improvements,
- 06 Building Improvements,
- 07 Fixtures,
- 08 Movable Equipment,
- 09 Capital Leases, and
- 10 Capital Costs
- 11 Building Service
- 12 Unallowable Fees

Chart of Accounts Example for Capital Costs – Worksheet 1:

Worksheet 1 – Capital Costs

Land Improvements

- 010-01-05 Capital Cost / Children Early Intervention/ Land Improvements
- 010-02-05 Capital Cost / Children Pre-School/ Land Improvements
- 010-03-05 Capital Cost / Children School Age/ Land Improvements
- 010-04-05 Capital Cost / Children Unassigned / Land Improvements
- 010-05-05 Capital Cost / Adult Facility Based Services / Land Improvements
- 010-06-05 Capital Cost / Adult Enclave / Land Improvements
- 010-07-05 Capital Cost / Adult Community Employment / Land Improvements
- 010-08-05 Capital Cost / Adult Unassigned / Land Improvements
- 010-09-05 Capital Cost / Medicaid Administration / Land Improvements
- 010-10-05 Capital Cost / County Board ICFMR / Land Improvements
- 010-11-05 Capital Cost / Community Residential / Land Improvements
- 010-12-05 Capital Cost / Family Support Services / Land Improvements
- 010-13-05 Capital Cost / SSA / Land Improvements
- 010-14-05 Capital Cost / Non-Federal Reimbursable Costs / Land Improvements
- 010-15-05 Capital Cost / Transportation / Land Improvements
- 010-16-05 Capital Cost / Administration / Land Improvements
- 010-17-05 Capital Cost / Program Supervision / Land Improvements
- 010-18-05 Capital Cost / General Expense / Land Improvements

Building Improvements

- 010-01-06 Capital Cost / Children Early Intervention/ Building Improvements
- 010-02-06 Capital Cost / Children Pre-School/ Building Improvements
- 010-03-06 Capital Cost / Children School Age/ Building Improvements
- 010-04-06 Capital Cost / Children Unassigned / Building Improvements
- 010-05-06 Capital Cost / Adult Facility Based Services / Building Improvements
- 010-06-06 Capital Cost / Adult Enclave / Building Improvements
- 010-07-06 Capital Cost / Adult Community Employment / Building Improvements
- 010-08-06 Capital Cost / Adult Unassigned / Building Improvements
- 010-09-06 Capital Cost / Medicaid Administration / Building Improvements
- 010-10-06 Capital Cost / County Board ICFMR / Building Improvements
- 010-11-06 Capital Cost / Community Residential / Building Improvements
- 010-12-06 Capital Cost / Family Support Services / Building Improvements
- 010-13-06 Capital Cost / SSA / Building Improvements
- 010-14-06 Capital Cost / Non-Federal Reimbursable Costs / Building Improvements

- 010-15-06 Capital Cost / Transportation / Building Improvements
- 010-16-06 Capital Cost / Administration / Building Improvements
- 010-17-06 Capital Cost / Program Supervision / Building Improvements
- 010-18-06 Capital Cost / General Expense / Building Improvements

Fixtures

- 010-01-07 Capital Cost / Children Early Intervention/ Fixtures
- 010-02-07 Capital Cost / Children Pre-School/ Fixtures
- 010-03-07 Capital Cost / Children School Age/ Fixtures
- 010-04-07 Capital Cost / Children Unassigned / Fixtures
- 010-05-07 Capital Cost / Adult Facility Based Services / Fixtures
- 010-06-07 Capital Cost / Adult Enclave / Fixtures
- 010-07-07 Capital Cost / Adult Community Employment / Fixtures
- 010-08-07 Capital Cost / Adult Unassigned / Fixtures
- 010-09-07 Capital Cost / Medicaid Administration / Fixtures
- 010-10-07 Capital Cost / County Board ICFMR / Fixtures
- 010-11-07 Capital Cost / Community Residential / Fixtures
- 010-12-07 Capital Cost / Family Support Services / Fixtures
- 010-13-07 Capital Cost / SSA / Fixtures
- 010-14-07 Capital Cost / Non-Federal Reimbursable Costs / Fixtures
- 010-15-07 Capital Cost / Transportation / Fixtures
- 010-16-07 Capital Cost / Administration / Fixtures
- 010-17-07 Capital Cost / Program Supervision / Fixtures
- 010-18-07 Capital Cost / General Expense / Fixtures

Movable Equipment

- 010-01-08 Capital Cost / Children Early Intervention/ Movable Equipment
- 010-02-08 Capital Cost / Children Pre-School/ Movable Equipment
- 010-03-08 Capital Cost / Children School Age/ Movable Equipment
- 010-04-08 Capital Cost / Children Unassigned / Movable Equipment
- 010-05-08 Capital Cost / Adult Facility Based Services / Movable Equipment
- 010-06-08 Capital Cost / Adult Enclave / Movable Equipment
- 010-07-08 Capital Cost / Adult Community Employment / Movable Equipment

- 010-08-08 Capital Cost / Adult Unassigned / Movable Equipment
- 010-09-08 Capital Cost / Medicaid Administration / Movable Equipment
- 010-10-08 Capital Cost / County Board ICFMR / Movable Equipment

- 010-11-08 Capital Cost / Community Residential / Movable Equipment
- 010-12-08 Capital Cost / Family Support Services / Movable Equipment
- 010-13-08 Capital Cost / SSA / Movable Equipment
- 010-14-08 Capital Cost / Non-Federal Reimbursable Costs / Movable Equipment
- 010-15-08 Capital Cost / Transportation / Movable Equipment
- 010-16-08 Capital Cost / Administration / Movable Equipment
- 010-17-08 Capital Cost / Program Supervision / Movable Equipment
- 010-18-08 Capital Cost / General Expense / Movable Equipment

Capital Leases

- 010-01-09 Capital Cost / Children Early Intervention/ Capital Leases
- 010-02-09 Capital Cost / Children Pre-School/ Capital Leases
- 010-03-09 Capital Cost / Children School Age/ Capital Leases
- 010-04-09 Capital Cost / Children Unassigned / Capital Leases
- 010-05-09 Capital Cost / Adult Facility Based Services / Capital Leases
- 010-06-09 Capital Cost / Adult Enclave / Capital Leases
- 010-07-09 Capital Cost / Adult Community Employment / Capital Leases
- 010-08-09 Capital Cost / Adult Unassigned / Capital Leases
- 010-09-09 Capital Cost / Medicaid Administration / Capital Leases
- 010-10-09 Capital Cost / County Board ICFMR / Capital Leases
- 010-11-09 Capital Cost / Community Residential / Capital Leases
- 010-12-09 Capital Cost / Family Support Services / Capital Leases
- 010-13-09 Capital Cost / SSA / Capital Leases
- 010-14-09 Capital Cost / Non-Federal Reimbursable Costs / Capital Leases
- 010-15-09 Capital Cost / Transportation / Capital Leases
- 010-16-09 Capital Cost / Administration / Capital Leases
- 010-17-09 Capital Cost / Program Supervision / Capital Leases
- 010-18-09 Capital Cost / General Expense / Capital Leases

Other

- 010-01-04 Capital Cost / Children Early Intervention/ Other
- 010-02-04 Capital Cost / Children Pre-School/ Other
- 010-03-04 Capital Cost / Children School Age/ Other
- 010-04-04 Capital Cost / Children Unassigned / Other
- 010-05-04 Capital Cost / Adult Facility Based Services / Other
- 010-06-04 Capital Cost / Adult Enclave / Other
- 010-07-04 Capital Cost / Adult Community Employment / Other

- 010-08-04 Capital Cost / Adult Unassigned / Other
- 010-09-04 Capital Cost / Medicaid Administration / Other
- 010-10-04 Capital Cost / County Board ICFMR / Other
- 010-11-04 Capital Cost / Community Residential / Other
- 010-12-04 Capital Cost / Family Support Services / Other
- 010-13-04 Capital Cost / SSA / Other
- 010-14-04 Capital Cost / Non-Federal Reimbursable Costs / Other
- 010-15-04 Capital Cost / Transportation / Other
- 010-16-04 Capital Cost / Administration / Other
- 010-17-04 Capital Cost / Program Supervision / Other
- 010-18-04 Capital Cost / General Expense / Other

NON-FEDERAL REIMBURSABLE COSTS

Allowable and reasonable costs in the Income and Expense Report will be determined in accordance with OMB Circular A-87, *as in effect on May 10, 2004*.

Following are excerpts from the Circular defining costs; i.e. items of cost that are not reimbursable by the federal government and are not to be included on the program columns of the Income and Expense Report. The excerpts are intended for reference only and not as a substitute for reading the document in its entirety.

OMB Circular A-87, Attachment B – *Selected Items of Cost* identified the following by Item # as Non-Federal Reimbursable Costs:

1. Advertising and Public Relations

f. Unallowable advertising and public relations costs include the following:

- (1) All advertising and public relations costs other than as specified in subsection c, *[recruitment of personnel required for the performance by the governmental unit of obligation arising under a Federal Award; procurement of goods and services for the performance of a Federal award; disposal of scrap or surplus materials acquired in the performance of a Federal award; and other purposes necessary to meet the requirements of the federal award]* d, *[costs of communicating with the public and press pertaining to specific activities or accomplishments which result from performance of Federal awards; or costs of conducting general liaison with news media and government public relations officers, to the extent that such activities are limited to communication necessary to keep the public informed on matters of public concern, such as notices of Federal contract/grant awards, financial matters, etc.]* and e; *[costs identified in subsections c and d if incurred for more than one Federal award]*.
- (2) Costs of meetings, conventions, convocations, or other events related to other activities of the governmental unit, including:
 - (a) Costs of display, demonstrations, and exhibits;
 - (b) Cost of meeting rooms, hospitality suites, and other special facilities used in conjunction with shows and other special events; and
 - (c) Salaries and wages of employees engaged in setting up and displaying exhibits making demonstrations, and providing briefings
- (3) Costs of promotional items and memorabilia, including models, gifts, pens, trinkets, and souvenirs.

(4) Costs of advertising and public relations designed solely to promote the governmental unit

3. Alcoholic Beverages

5. Bad Debts

8. Compensation for Personnel Services

c. Costs that are unallowable under other sections shall not be allowable under this section solely on the basis that they constitute personnel compensation.

i. The value of donated services is not reimbursable either a direct or indirect cost.

9. Contingencies

Contributions to a contingency reserve or any similar provision made for events the occurrence of which cannot be foretold with certainty as to time, intensity, or with an assurance of their happening, are unallowable.

10. Defense and Prosecution of Criminal/Civil Proceedings and Claims

b. Legal expenses for prosecution of claims against the Federal Government.

12. Donations and Contributions

a. Contributions or donation, including cash, property, and services, made by the governmental unit, regardless of the recipient, are unallowable.

14. Entertainment

Costs of entertainment, including amusement, diversion, and social activities and any costs directly associated with the entertainment including transportation, meals, gratuities.

16. Fines and Penalties

Fines, penalties, damages and other settlements resulting from real or alleged violations of Federal, State, local laws and regulations.

17. Fund Raising and Investment Management

- a. Costs of organized fund raising, including financial campaigns, solicitation of gifts and bequests, and similar expenses incurred to raise capital or obtain contributions are unallowable, regardless of the purpose for which the funds will be used.
- b. Costs of investment counsel and staff and similar expenses incurred to enhance income from investments are unallowable.

19. General Government Expenses

Costs of general government including salaries and expenses of the...chief executive officer of a governmental unit, state legislatures, county supervisors, local school boards and the judiciary branch of a government included below:

Costs of prosecutorial activities unless treated as a direct cost to a specific program if authorized by program statute or regulation.

Salaries and other expenses of a...local governmental body, such as a county supervisor, city council, school board, etc., whether incurred for purposes of legislation or executive direction.

Cost of other general types of government services normally provided to the general public, such as fire and police, unless provided for as a direct cost under a program statute or regulation.

20. Goods or Services for Personal Use

Cost of goods or services for personal use of the governmental unit's employees are unallowable regardless of whether the cost is reported as taxable income to the employees.

21. Idle facilities and idle capacity

b. The cost of idle facilities is unallowable except to the extent that:

(1) They are necessary to meet fluctuations in workload; or

(2) Although not necessary to meet fluctuations in workload, they are necessary when acquired and are now idle because of changes in program requirements, efforts to achieve more economical operations, reorganization, termination, or other causes which could not have been reasonably foreseen. Under the exceptions stated in this subsection, costs of idle facilities are allowable for a reasonable period of time, ordinarily not to exceed one year, depending on the initiative taken to use, lease, or dispose of such facilities.

22. Insurance and Indemnification

c. Actual losses that could have been covered by a permissible insurance program, including self-insurance or other type.

h. Costs of commercial insurance that protects against the costs of a contractor for defects in the contractor's materials or workmanship.

23. Interest

Interest attributable to a fully depreciated asset is unallowable.

24. Lobbying

- a. The cost of influencing activities to obtain grants, contracts, cooperative agreements or loans.
- b. Cost incurred in attempting to improperly influence either directly or indirectly, an employee or officer of the Executive Branch of the Federal Government to give consideration or to act regarding a sponsored agreement or a regulatory matter are unallowable.

28. Memberships, Subscriptions and Professional Activities

Costs of membership in organizations substantially engaged in lobbying.

32. Professional Service Costs

- a. Costs of professional and consultant services rendered by persons who are members of a particular profession or possess a special skill, and who are not officers or employees of the governmental unit, are allowable, subject to paragraph b and c when reasonable in relation to the services rendered and when **not contingent** [emphasis added] upon recovery of costs from the Federal Government.

40. Taxes

Self-assessed taxes or changes in tax policies that disproportionately affect Federal programs.

43. Travel Costs

- c. Commercial air travel
 - (1) Airfare costs in excess of the customary standard commercial airfare (coach class, or equivalent) except when:
 - (a) required circuitous routing,
 - (b) required travel during unreasonable hours,
 - (c) excessively prolong travel,
 - (d) result in additional costs that would offset the transportation savings; or
 - (e) offer accommodations not reasonably adequate for the traveler's medical needs. The governmental unit must justify and document these conditions on a case-by-case basis in order for the use of first-class airfare to be allowable in such cases.
- d. Air travel by other than commercial carrier. Costs of travel by governmental unit-owned – leased, or chartered aircraft include the cost of lease, charter, operation (including personnel costs) maintenance, depreciation, insurance, and other related costs. The portion of such costs that exceeds the cost of allowable commercial air travel, is unallowable.

Other Unallowable Costs

- Service and Support Administration Unallowable Covered Exclusions – See Unallowable SSA Costs as detailed in the instructions for Worksheet 9.
- Non MER or Reallocation portion of salaries charged to Medicaid Administration, or the allocation portion thereof.
- 1½ % DODD Administration & Oversight Fees – these fees do not meet the requirements of 42 CFR 433. This statute specifies that a tax will be considered broad based even if public providers are excluded from the tax or assessment.

Glossary of Terms

Administrative Staff

Personnel who provide indirect services to individuals with mental retardation and developmental disabilities. Traditionally, administrative staff provides an array of services that address the needs of the consumers of services, their family members, friends and guardians, staff of the county board, regulatory and funding agencies and the community at large. Administrative functions occur at every level of the organization and, as such, are not comprised solely of persons in the executive or upper management levels.

Commercial Vehicles

Commercial vehicles as used in O.A.C. 5123:2-9-19(E) shall have the same meaning as the term *non-specialized transportation* which is defined in O.A.C. 5123:2-1-03.

As such, for the purposes of billing for [reporting costs and] billing, the vehicle would be available to the public for local transit systems and public transportation systems. These transportation services may be provided by:

1. a public transit agency organized under Chapter 306m Revised Code; and/or
2. a participating agency under the Ohio Department of Transportation's coordination project, commonly referred to as Coordinated Transit.

Vehicles operated by any transportation service that is designed and operated primarily to serve individuals with mental retardation and developmental disabilities, including a transportation service provide by an entity licensed or

certified by DODD, are not considered to be commercial vehicles for the purposes of [reporting costs and] billing for Non-medical Transportation services. (Source: e-mail from Nancy McAvoy to CB Superintendents dated December 27, 2007 @ 4:41PM)

Direct Services Staff

Personnel whose daily responsibilities are to manage, supervise and provide support to individuals with mental retardation and developmental disabilities who receive services directly from county dd boards and/or from subcontractors of the county dd boards. Direct services are intended to reinforce the objectives contained in the service plans developed for each individual. Direct services staff provides assistance with activities of daily living, coordination of services, vocational and educational instruction, community access and integration training, job development, job site coaching and training and follow along services to promote skill retention.

Direct services staff may:

1. Be registered and/or certified by the Department of Developmental Disabilities and/or;
2. Hold a valid license issued under Chapter 3319 of the Ohio Revised Code and provide teaching or supervision of a teaching program.

Enclave

Supported Employment services provided to waiver enrollees who work as a team at a single work site of the 'host' community business or industry with initial training, supervision and ongoing support provided by specially trained, on-site supervisors.

Non-vocational Services

Activities of daily living, professional therapies, psychology and behavioral support services, nursing services or delegated nursing services, education,

recreation, community integration, social skills development and services for older adults.

Professional Staff

Personnel who perform duties governed by license or certificate issued under Title XLVII of the Ohio Revised Code including physical therapy, occupational therapy, speech therapy, social work/counseling, medicine, nursing and psychology.

Unduplicated Individuals by Program Area

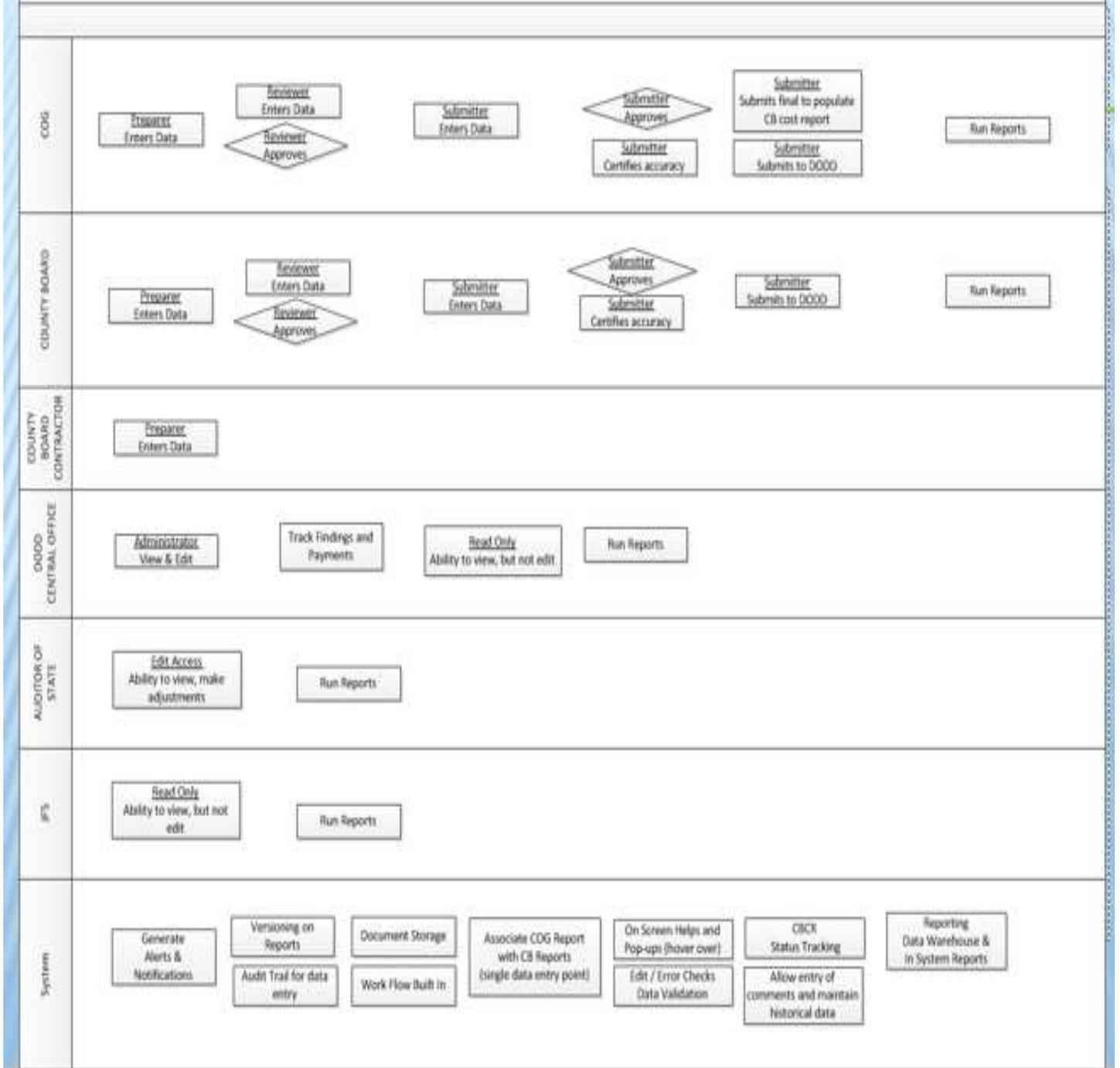
The same individual during the cost reporting period is counted in each program from which the individual is served. As an example, if an adult received Adult Day Support, Supported Employment – Enclave and Supported Employment - Community services at any time during the cost reporting period, the county board would indicate a 1 in each of the three lines labeled as Facility Based Services (A), Supported Emp Enclave (B) and Supported Emp.- Community Employment (C) on Schedule B-1, Section B.

Appendix D

DODD

County Board Cost Report Roles

0000 FISCAL - COUNTY BOARD COST REPORTS (CBCR) BY ROLES 10/4/12

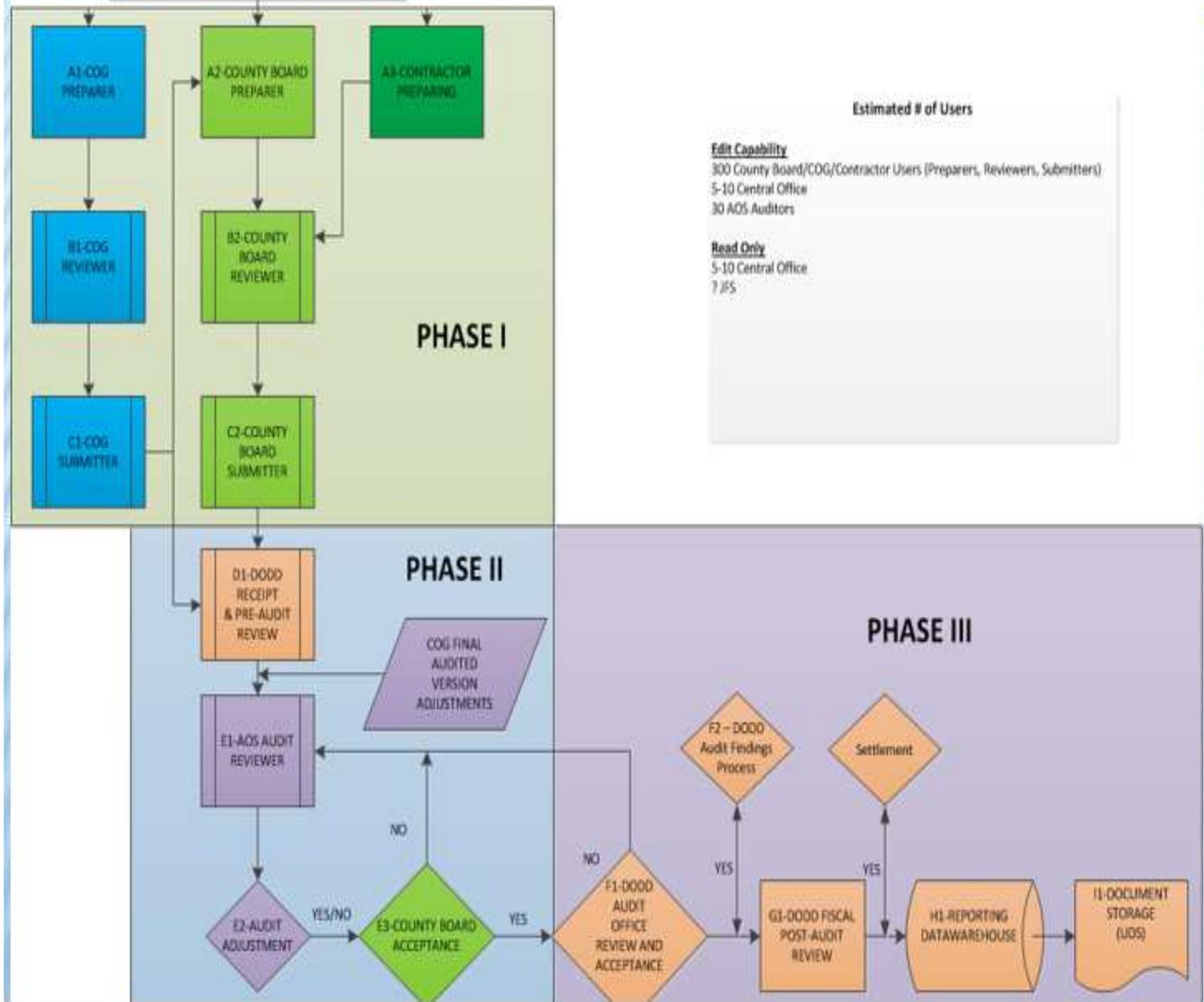


Appendix E

DODD

County Board Cost Report Workflow

DODD FISCAL COUNTY BOARD COST REPORT WORKFLOW

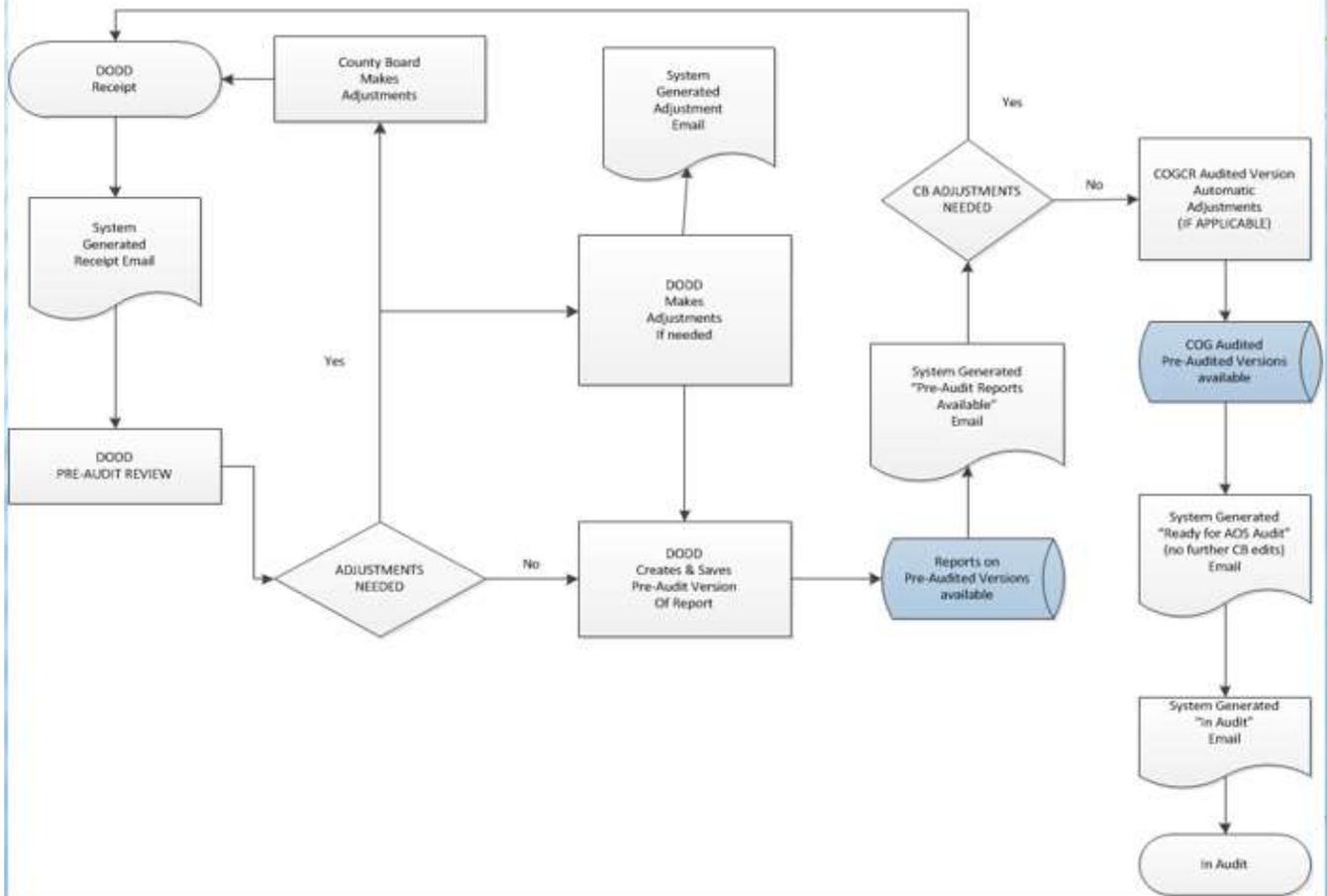


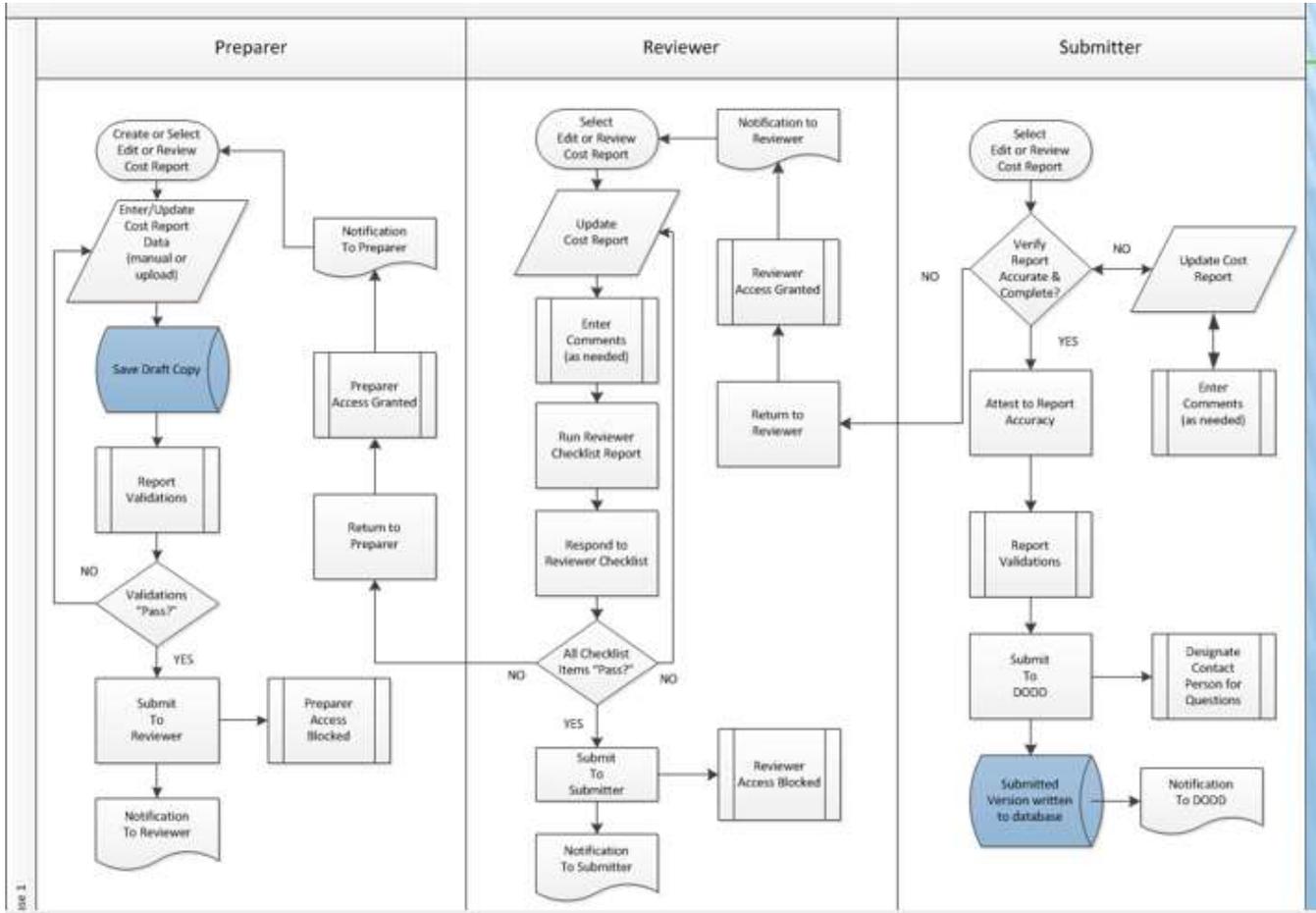
Appendix F

DODD

CB-DODD Pre-Audit workflow

D1-CB - DODD PRE-AUDIT WORKFLOW





Appendix G

DODD

CBCR User Story Builder (user stories)

*****Please see Excel***
spreadsheet with
attached user stories**

Supplement 1:

**State Architecture and Computing Standards
Requirements**

State Security and Privacy Requirements

State IT Computing Policy Requirements

State Data Handling Requirements

1. Overview and Scope

This Supplement shall apply to any and all Work, Services, Locations and Computing Elements that the Contractor will perform, provide, occupy or utilize in conjunction with the delivery of work to the State and any access of State resources in conjunction with delivery of work.

This scope shall specifically apply to:

- Major and Minor Projects, Upgrades, Updates, Fixes, Patches and other Software and Systems inclusive of all State elements or elements under the Contractor's responsibility utilized by the State;
- Any systems development, integration, operations and maintenance activities performed by the Contractor;
- Any authorized Change Orders, Change Requests, Statements of Work, extensions or Amendments to this agreement;
- Contractor locations, equipment and personnel that access State systems, networks or data directly or indirectly; and
- Any Contractor personnel, or sub-Contracted personnel that have access to State confidential, personal, financial, infrastructure details or sensitive data.

The terms in this Supplement are additive to the Standard State Terms and Conditions contained elsewhere in this agreement. In the event of a conflict for whatever reason, the highest standard contained in this agreement shall prevail.

2. State Architecture and Computing Standards Requirements

2.1. Requirements Overview

Offerors responding to State issued statement of work (SOW) requests, and as Contractors performing the work following an award are required to propose solutions that comply with the standards outlined in this document. In the event of a conflict with any published Standard, a variance may be requested, and the Offeror must show sufficient business justification for the variance request. The Enterprise IT Architecture Team will engage with the Contractor and appropriate State stakeholders to review and approve / deny the variance request.

2.1.1. State of Ohio Standards

The State has a published Core Technology Stack as well as Enterprise Design Standards as outlined in this document and, due to State preferences, are subject to improvements and change. The State also provides numerous IT Services in both the Infrastructure and Application categories, as outlined in the State's IT Services Catalog at:

<http://das.ohio.gov/Divisions/InformationTechnology/StateofOhioITServiceCatalog.aspx>

2.1.2. Offeror Responsibilities

Offerors can propose on-premise or cloud-based solutions. When proposing on-premise solutions, vendors must comply with State requirements including using the State's Virtualized Compute Platform. Unless otherwise specified in the SOW request, offerors proposing on-premise solutions are required to install third

party applications on State provided compute platforms. Dedicated server platforms are not compliant with the State's Virtualization Requirements.

Hardware and storage (memory, speeds, cpu and other configuration details) should be proposed to adhere to established State standards (generally VMware based system images for x86 environments) and or virtualized Oracle Exadata/Exalogic frames and components unless otherwise specified in the SOW Request.

In addition, Offerors are required to take advantage of all published IT Application Services where possible, i.e. Enterprise Service Bus, Content Management, Enterprise Document Management, Data Warehousing, Data Analytics and Reporting and Business Intelligence. When dedicated Application components are required, i.e. Application Servers, Databases, etc., they should comply with the Core Technology standards.

2.1.3. State Infrastructure Services

The State of Ohio's Office of Information Technology Infrastructure Services Division (OIT/ISD) will be responsible for providing the technical infrastructure platform as a service to the Contractor and will host the Contractor developed software and operating solution following the conclusion of the project for on-premise solutions. In general, this service includes the following:

- Primary Computing Facility: State of Ohio Computing Center (secure Tier III capable facility)
- Alternate/Disaster Recovery Center: Ohio Based Secure Tier II facility
- Redundant Networking between State facilities and Data Centers (Metro-E to 10Gb/s OARnet)
- Physical and Infrastructure Security Services
- Redundant Power, Cooling, Fire Suppression and onsite Redundant UPS/Power Generation
- Servers, Storage, Networking Devices, Firewalls, Security Appliances, Vulnerability and Virus Scanning to the operating system prompt
- Binding SLAs regarding performance, availability, reliability, provisioning and systems administrative access

The State of Ohio will provide ITIL based services in support of the Contractor as follows:

State Infrastructure Responsibility Matrix	
<p>Asset Management</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hardware Asset Tracking <input type="checkbox"/> Software Asset Tracking <input type="checkbox"/> Logistics Support <input type="checkbox"/> Inventory Capture and Maintenance <p>Service Desk</p> <ul style="list-style-type: none"> <input type="checkbox"/> Help Desk Operations <input type="checkbox"/> Help Desk Tools <input type="checkbox"/> Service Desk Processes 	<p>Enterprise Security Management</p> <ul style="list-style-type: none"> <input type="checkbox"/> Emergency Response Service <input type="checkbox"/> Threat Analysis <input type="checkbox"/> Managed Intrusion/Detection/Prevention <input type="checkbox"/> System Security Checking <input type="checkbox"/> Security Advisory and Integrity <input type="checkbox"/> Malware Defense Management <input type="checkbox"/> Vulnerability Management <input type="checkbox"/> ID Management <input type="checkbox"/> Security Policy Management <input type="checkbox"/> Security Compliance Support <input type="checkbox"/> Security Audit

<p>Server Management</p> <ul style="list-style-type: none"> <input type="checkbox"/> Platform Support (Tools/Processes Procedures) <input type="checkbox"/> Unix/Intel Servers <input type="checkbox"/> Incident Management <input type="checkbox"/> Server Operations <input type="checkbox"/> High Availability <input type="checkbox"/> File Management <p>Storage Planning</p> <ul style="list-style-type: none"> <input type="checkbox"/> Capacity Management <input type="checkbox"/> Storage Performance Management 	<p>Data Center and Wide Area LAN/WAN Management</p> <ul style="list-style-type: none"> <input type="checkbox"/> Enterprise Internet Services <input type="checkbox"/> Regulatory/Change Management <input type="checkbox"/> Network Engineering <input type="checkbox"/> Standards <input type="checkbox"/> LAN/WAN Management <input type="checkbox"/> Network Operations and Management <input type="checkbox"/> Network Capacity/Availability Management <input type="checkbox"/> Network HW/SW Management <input type="checkbox"/> Network Security <input type="checkbox"/> Network M/A/C/D
<p>Data Center Architecture Planning</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hardware/Facilities Planning <input type="checkbox"/> Unix/Intel Servers <input type="checkbox"/> Platform Configuration Management <input type="checkbox"/> Performance Management <input type="checkbox"/> Capacity Management <input type="checkbox"/> Batch Operations/Scheduling <input type="checkbox"/> Storage Management <input type="checkbox"/> Backup/Restore <input type="checkbox"/> Media Management, Media Operations, Offsite Storage 	<p>Data Center Facilities Management</p> <ul style="list-style-type: none"> <input type="checkbox"/> Site Maintenance and Operations <input type="checkbox"/> Site Availability Management <input type="checkbox"/> Routine Maintenance and Upgrades <input type="checkbox"/> Non-Technical Services (parking lot, landscaping, snow removal etc.)

2.2. Compute Requirements

2.2.1. Client Computing

Offerors **must not** propose solutions that require custom PC's, Laptops, Notebooks etc. Unless otherwise specified in the SOW request, the State will source its own Client computing hardware and the Offeror's proposed solutions are required to be compatible with the State's hardware.

2.2.2. Server / OS

Offerors **must** propose solutions that comply with the State's supported Server / OS versions.

The following are the State's Required Server and OS versions.

Table 1 – Supported Server/OS versions

Operating System	Version	Edition
Microsoft Windows Server	2012, 2012 R2	Standard, Enterprise, & Datacenter
RedHat Linux	7	Enterprise
SUSE Linux	11	Enterprise
IBM AIX	7.1	
Oracle Enterprise Linux		Enterprise

When Offerors are proposing on-premise solutions, these solutions must comply with the State's supported Server Compute Platforms.

The State hosts and manages the Virtual Server hardware and Virtualization layer. The State is also responsible for managing the server's Operating System (OS). This service includes 1 virtual CPU (vCPU), 1 GB of RAM and 50 GB of Capacity Disk Storage. Customers can request up to 8 vCPUs and 24GB of RAM.

For Ohio Benefits and the Ohio Administrative Knowledge System (OAKS) – Exalogic Version 2.0.6.0.2

2.2.3. Ohio Cloud: Hypervisor Environment

When Offerors are proposing on-premise solutions, these solutions *must* comply with the State's supported VMware vSphere, and IBM Power Hypervisor environment.

For Ohio Benefits and OAKS – Oracle Virtual Manager Version 3.3.1, Xen

2.3. Storage and Backup Requirements

2.3.1. Storage Pools

The State provides three pools (tiers) of storage with the ability to use and allocate the appropriate storage type based on predetermined business criticality and requirements. Storage pools are designed to support different I/O workloads.

When Offerors are proposing on-premise solutions, these solutions *must* take advantage of the State's Storage Service Offerings.

For Ohio Benefits and OAKS - HA (High Availability) storage used with Mirror configuration.

The pools and their standard use cases are below:

Table 2 – State Supported Storage Pools

Storage Pool	Availability	Performance	Typical Applications
Performance	Highest	Fast	Performance pool suited for high availability applications, with high I/O (databases).
General	High	Fast	General pool suitable for file servers, etc.
Capacity	High	Average	Capacity pool suitable for file servers, images and backup / archive). Not suited for high random I/O.

2.3.2. Backup

When Offerors are proposing on-premise solutions, these solutions *must* take advantage of the State's Backup Service Offering.

Backup service uses IBM Tivoli Storage Manager Software and provides for nightly backups of customer data. It also provides for necessary restores due to data loss or corruption. The option of performing additional backups, archiving, restoring or retrieving functions is available for customer data. OIT backup

facilities provide a high degree of stability and recoverability as backups are duplicated to the alternate site. All critical production systems must also use the State's DR facility.

For Ohio Benefits - Symantec NetBackup is the Enterprise backup solution.

2.4. Networking Requirements: Local Area Network (LAN) / Wide Area Network (WAN)

Offerors **must** propose solutions that work within the State's LAN / WAN infrastructure.

The State of Ohio's One Network is a unified solution that brings together Design, Engineering, Operations, Service Delivery, Security, Mobility, Management, and Network Infrastructure to target and solve key Government challenges by focusing on processes, procedures, consistency and accountability across all aspects of State and Local Government.

Ohio One Network can deliver an enterprise network access experience for their customers regardless of location or device and deliver a consistent, reliable network access method.

The State provides a high bandwidth internal network for internal applications to communicate across the State's LAN / WAN infrastructure. Normal traffic patterns at major sites should be supported.

Today, the State's WAN (OARnet) consists of more than 1,850 miles of fiber-optic backbone, with more than 1,500 miles of it operating at ultrafast 100 Gbps speeds. The network blankets the state, providing connectivity to all State Government Agencies.

The State of Ohio Network infrastructure utilizes private addressing, reverse proxy technology and Network Address Translation (NAT). All applications that are to be deployed within the infrastructure must be tolerant of these technologies for both internal product interaction as well as external user access to the proposed system, infrastructure or application.

The State Network team will review applications requirements involving excessive bandwidth (i.e. voice, video, telemetry, or applications) deployed at remote sites.

2.5. Application Requirements

2.5.1. Application Platforms

When Offerors are proposing on-premise solutions, these solutions *must* be developed in open or industry standard languages (e.g. Java, .NET, PHP, etc.)

2.5.2. Open API's

Proposed vendor applications must be developed with standards-based Open API's. An open API is an application program interface that provides programmatic access to software applications. Proposed vendor applications must describe in detail all available features and functionality accessible via APIs.

2.5.3. SOA (Service Oriented Architecture)

When Offerors are proposing on-premise solutions, these solutions *must* be developed using a standards-based Service Oriented Architecture (SOA) model.

2.6. Database Platforms

Proposed vendor application designs must run on databases that comply with the State's supported Database Platforms.

- DB2 Version 10
- SQL 2012 or higher
- ORACLE 11g and 12C
- Exadata Version 11.2.3.2.1

2.7. Enterprise Application Services

The State of Ohio Office of Information Technology (OIT) provides a number of Enterprise Shared Services to State agencies as outline in the IT Services Catalog available at:

<http://das.ohio.gov/Divisions/InformationTechnology/StateofOhioITServiceCatalog.aspx>

At a minimum, proposed vendor application designs that include the following Application Services *must* use the Application IT Services outlined in the IT Services Catalog.

2.7.1. Health and Human Services: Integrated Eligibility

The Integrated Eligibility Enterprise platform provides four key distinct technology domains / capabilities:

- Common Enterprise Portal – includes User Interface and User Experience Management, Access Control, Collaboration, Communications and Document Search capability
- Enterprise Information Exchange – includes Discovery Services (Application and Data Integration, Master Data Management (MDM) Master Person Index and Record Locator Service), Business Process Management, Consent Management, Master Provider Index and Security Management
- Analytics and Business Intelligence – Integration, Analysis and Delivery of analytics in the form of alerts, notifications and reports
- Integrated Eligibility – A common Enterprise Application framework and Rules Engine to determine eligibility and benefits for Ohio Public Benefit Programs

2.7.2. The Ohio Business Gateway (OBG)

The Ohio Business Gateway (OBG) offers Ohio's businesses a time-and money-saving online filing and payment system that helps simplify business' relationship with Government agencies.

- New Business Establishment – Provides a single, portal based web location for the establishment of new businesses in Ohio, file with the required State agencies and ensure that business compliance requirements of the State are met.
- Single Point Revenue and Fee Collection - Manage payments to State's payment processor (CBOSS) and broker payment to multiple agencies while creating transaction logs and Business Customer "receipts".

- One-Stop Filing and Forms - Provides guides and forms to Business Users through complex transactions that have multiple steps, forms and / or filing requirements for users on procedures to complete the process including Agencies and (if applicable) systems they will need to interact with.
- Scheduling and Reminders - Notify Business Customers of a particular event that is upcoming or past due (Filing due) using a “calendar” or “task list” metaphor.
- Collections and Confirmations – Provides a Payment Card Industry (PCI) certified web-based payment solution that supports a wide range of payment types: credit cards, debit cards, electronic checks, as well as recurring, and cash payments.

2.7.3. Ohio Administrative Knowledge System (OAKS)

OAKS is the State’s Enterprise Resource Planning (ERP) system, which provides central administrative business services such as Financial Management, Human Capital Management, Content Management via myOhio.gov, Enterprise Learning Management, and Customer Relationship Management. Core System Capabilities include (but are not limited to):

Content Management (myohio.gov)

- Centralized Communications to State Employees and State Contractors
- OAKS alerts, job aids, and news
- Statewide Top Stories
- Portal to OAKS applications
- Employee and Contractor Management

Enterprise Business Intelligence

- Key Financial and Human Resources Data, Trends and Analysis
- Cognos driven standardized and adhoc reporting

Financial Management (FIN)

- Accounts Payable
- Accounts Receivable
- Asset Management
- Billing
- eBid
- eCatalog (Ohio Marketplace)
- eInvoicing (coming Fall 2015)
- eSupplier/Offeror Maintenance
- Financial Reporting
- General Ledger
- Planning and Budgeting
- Procurement
- Travel & Expense

Enterprise Learning Management (ELM)

- Training Curriculum Development
- Training Content Delivery

Human Capital Management (HCM)

- Benefits Administration
- Payroll
- Position Management
- Time and Labor
- Workforce Administration: Employee and Contingent Workers
- Employee Self-Service
- eBenefits
- ePerformance
- Payroll

2.7.4. Enterprise Business Intelligence

- Health and Human Services Information
 - Eligibility
 - Operational Metrics
 - County Caseworker Workload
 - Claims [Q1, 2015]
 - Long Term Care [Q2, 2015]
- Financial Information
 - General Ledger (Spend, Disbursement, Actual/Forecast)
 - Travel and Expense
 - Procure to Pay (AP/PO/Offeror/Spend)
 - Capital Improvements
 - Accounts Receivable
 - Asset Management
- Workforce and Human Resources
 - Workforce Profile
 - Compensation
 - MBE/EDGE

2.7.5. Enterprise Content Management

Hyland OnBase is the State's Enterprise Content Management system for Document Imaging and Document and Records Management. The service is designed to provision, operate and maintain the State's Enterprise Content Management solution.

2.7.6. SharePoint

Microsoft SharePoint Server 2013 portal setup and hosting services for agencies interested in internal collaboration, external collaboration, organizational portals, business process workflow, and business intelligence. The service is designed to provision, operate and maintain the State's enterprise Active Directory Accounts.

2.7.7. IT Service Management

ServiceNow, a cloud-based IT Service Management Tool that provides internal and external support through an automated service desk workflow based application which provides flexibility and ease of use. The IT Service Management Tool provides workflows aligning with ITIL processes such as Incident Management, Request Fulfillment, Problem Management, Change Management and Service Catalog.

2.7.8. Customer/Citizen Relationship Management (CRM)

Salesforce, is the State's cloud-based Customer Relationship Management tool that helps agencies build stronger connections between citizens, employees, governments, services, and the information they need.

2.7.9. Enterprise Geocoding Services

Enterprise Geocoding Services (EGS) combine address standardization, geocoding, and spatial analysis into a single service. Individual addresses can be processed in real time for on line applications or large numbers of addresses can be processed in batch mode.

2.7.10. GIS Hosting

GIS Hosting delivers dynamic maps, spatial content, and spatial analysis via the Internet. User agencies can integrate enterprise-level Geographic Information Systems (GIS) with map capabilities and spatial content into new or existing websites and applications.

2.8. Productivity, Administrative and Communication Requirements

2.8.1. Communication Services

The State of Ohio Office of Information Technology (OIT) provides a number of Enterprise Shared Services to State agencies as outlined in the IT Services Catalog available at:

<http://das.ohio.gov/Divisions/InformationTechnology/StateofOhioITServiceCatalog.aspx>

At a minimum, proposed vendor application designs that include the following Communication Services **must** use the Communication Services outlined in the IT Services Catalog.

Exchange

- Exchange Mail
- Office 365
- Skype for Business Instant Messaging & Presence
- Enterprise Vault
- Clearwell eDiscovery
- Exchange Web Services
- Bulk Mailing

- External Mail Encryption
- Outbound Fax
- Mobile devices

EDI/Application Integration/Medicaid EDI

Lyris Listserv

On-premise application based FAX: eFAX

Fax2Mail is a “hosted” fax solution that allows agencies to seamlessly integrate inbound and outbound Fax with their existing desktop E-mail and back-office environments. Fax2Mail is a “cloud-based” solution.

Voice over Internet Protocol (VoIP)

The CBTS VoIP service, which is open to all agencies, boards, commissions, local governments and state supported education institutions, as well as State of Ohio Cooperative Purchasing Program members, provides core telephony, voice mail, collaboration, video, audio, and auto attendant functions to eligible customers. Optional services including ACR, IVR, Call Center Solutions and SIP Trunking are also available.

3. General State Security and Information Privacy Standards and Requirements

The Contractor will be responsible for maintaining information security in environments under the Contractor’s management and in accordance with State IT Security Policies. The Contractor will implement an information security policy and security capability as set forth in this agreement.

The Contractor’s responsibilities with respect to Security Services will include the following:

- Provide vulnerability management Services for the Contractor’s internal secure network connection, including supporting remediation for identified vulnerabilities as agreed.
- Support the implementation and compliance monitoring for State IT Security Policies.
- Develop, maintain, update, and implement security procedures, with State review and approval, including physical access strategies and standards, ID approval procedures and a breach of security action plan.
- Manage and administer access to the systems, networks, System software, systems files and State data, excluding end-users.
- Provide support in implementation of programs to educate State and Contractor end-users and staff on security policies and compliance.
- Install and update Systems software security, assign and reset passwords per established procedures, provide the State access to create User ID's, suspend and delete inactive logon IDs, research system security problems, maintain network access authority, assist in processing State security requests, perform security reviews to confirm that adequate security procedures are in place on an ongoing basis, and provide incident investigation support (jointly with the State), and provide environment and server security support and technical advice.
- Develop, implement, and maintain a set of automated and manual processes to ensure that data access rules are not compromised.

- Perform physical security functions (e.g., identification badge controls, alarm responses) at the facilities under the Contractor's control.
- Prepare an Information Security Controls Document. This document is the security document that is used to capture the security policies and technical controls that the Contractor will implement, as requested by the State, on Contractor managed systems, supported servers and the LAN within the scope of this agreement. The Contractor will submit a draft document for State review and approval during the transition period.

The State will:

- Develop, maintain and update the State IT Security Policies, including applicable State information risk policies, standards and procedures.
- Provide a State Single Point of Contact with responsibility for account security audits;
- Support intrusion detection and prevention and vulnerability scanning pursuant to State IT Security Policies;
- Provide the State security audit findings material for the Services based upon the security policies, standards and practices in effect as of the Effective Date and any subsequent updates.
- Assist the Contractor in performing a baseline inventory of access IDs for the systems for which the Contractor has security responsibility;
- Authorize User IDs and passwords for the State personnel for the Systems software, software tools and network infrastructure systems and devices under Contractor management;
- Approve non-expiring passwords and policy exception requests, as appropriate.

3.1. State Provided Elements: Contractor Responsibility Considerations

The State is responsible for Network Layer (meaning the internet Protocol suite and the open systems interconnection model of computer networking protocols and methods to process communications across the IP network) system services and functions that build upon State infrastructure environment elements, the Contractor shall not be responsible for the implementation of Security Services of these systems as these shall be retained by the State.

To the extent that Contractor's access or utilize State provided networks, the Contractor is responsible for adhering to State policies and use procedures and do so in a manner as to not diminish established State capabilities and standards.

The Contractor will be responsible for maintaining the security of information in environment elements that it accesses, utilizes, develops or manages in accordance with the State Security Policy. The Contractor will implement information security policies and capabilities, upon review and agreement by the State, based on the Contractors standard service center security processes that satisfy the State's requirements contained herein.

The Contractor's responsibilities with respect to security services must also include the following:

- Support intrusion detection & prevention including prompt agency notification of such events, reporting, monitoring and assessing security events.
- Provide vulnerability management services including supporting remediation for identified vulnerabilities as agreed.

- Support the State IT Security Policy which includes the development, maintenance, updates, and implementation of security procedures with the agency's review and approval, including physical access strategies and standards, ID approval procedures and a breach of security action plan.
- Support OIT in the implementation, maintenance and updating of statewide data security policies, including the State information risk policies, standards and procedures.
- Managing and administering access to the systems, networks, Operating Software or System Software, (including programs, device drivers, microcode and related code supporting documentation and media that: 1) perform tasks basic to the functioning of data processing and network connectivity; and 2) are required to operate Applications Software), systems files and the State Data.
- Supporting the State in implementation of programs to raise the awareness of End Users and staff personnel as to the existence and importance of security policy compliance.
- Installing and updating State provided or approved system security Software, assigning and resetting passwords per established procedures, providing the agency access to create user ID's, suspend and delete inactive logon IDs, research system security problems, maintain network access authority, assisting in processing the agency requested security requests, performing security audits to confirm that adequate security procedures are in place on an ongoing basis, with the agency's assistance providing incident investigation support, and providing environment and server security support and technical advice.
- Developing, implementing, and maintaining a set of automated and manual processes so that the State data access rules, as they are made known by the State, are not compromised.
- Performing physical security functions (e.g., identification badge controls, alarm responses) at the facilities under Contractor control.

3.2. Periodic Security and Privacy Audits

The State shall be responsible for conducting periodic security and privacy audits and generally utilizes members of the OIT Chief Information Security Officer and Privacy teams, the OBM Office of Internal Audit and the Auditor of State, depending on the focus area of an audit. Should an audit issue or finding be discovered the following resolution path shall apply:

- If a security or privacy issue is determined to be pre-existing to this agreement, the State will have responsibility to address or resolve the issue. Dependent on the nature of the issue the State may elect to contract with the Contractor under mutually agreeable terms for those specific resolution services at that time or elect to address the issue independent of the Contractor.
- For in-scope environments and services, all new systems implemented or deployed by the Contractor shall comply with State security and privacy policies.

3.3. Annual Security Plan: State and Contractor Obligations

The Contractor will develop, implement and thereafter maintain annually a Security Plan for review, comment and approval by the State Information Security and Privacy Officer, that a minimum must include and implement processes for the following items related to the system and services:

- Security policies
- Logical security controls (privacy, user access and authentication, user permissions, etc.)
- Technical security controls and security architecture (communications, hardware, data, physical access, software, operating system, encryption, etc.)
- Security processes (security assessments, risk assessments, incident response, etc.)
- Detail the technical specifics to satisfy the following:
- Network segmentation

- Perimeter security
- Application security and data sensitivity classification
- PHI and PII data elements
- Intrusion management
- Monitoring and reporting
- Host hardening
- Remote access
- Encryption
- State-wide active directory services for authentication
- Interface security
- Security test procedures
- Managing network security devices
- Security patch management
- Detailed diagrams depicting all security-related devices and subsystems and their relationships with other systems for which they provide controls
- Secure communications over the Internet

The Security Plan must detail how security will be controlled during the implementation of the System and Services and contain the following:

- High-level description of the program and projects
- Security risks and concerns
- Security roles and responsibilities
- Program and project security policies and guidelines
- Security-specific project deliverables and processes
- Security team review and approval process
- Security-Identity management and Access Control for Contractor and State joiners, movers, and leavers
- Data Protection Plan for personal/sensitive data within the projects
- Business continuity and disaster recovery plan for the projects
- Infrastructure architecture and security processes
- Application security and industry best practices for the projects
- Vulnerability and threat management plan (cyber security)

3.4. State Network Access (VPN)

Any remote access to State systems and networks, Contractor or otherwise, must employ secure data transmission protocols, including the secure sockets layer (SSL) protocol and public key authentication, signing and encryption. In addition, any remote access solution must use Secure Multipurpose Internet Mail Extensions (S/MIME) to provide encryption and non-repudiation services through digital certificates and the provided PKI. Multi-factor authentication is to be employed for users with privileged network access by leveraging the State of Ohio RSA solution.

3.5. Security and Data Protection.

All Services must also operate at the [moderate level baseline] as defined in the National Institute of Standards and Technology (“NIST”) 800-53 Rev. 3 [moderate baseline requirements], be consistent with Federal Information Security Management Act (“FISMA”) requirements, and offer a customizable and extendable capability based on open-standards APIs that enable integration with third party applications. Additionally, they must provide the State’s systems administrators with 24x7 visibility into the services through a real-time, web-based “dashboard” capability that enables them to monitor, in real or near real time, the Services’ performance against the established SLAs and promised operational parameters.

3.6. State Information Technology Policies

The Contractor is responsible for maintaining the security of information in environment elements under direct management and in accordance with State Security policies and standards. The Contractor will implement information security policies and capabilities as set forth in Statements of Work and, upon review and agreement by the State, based on the Offeror’s standard service center security processes that satisfy the State’s requirements contained herein. The Offeror’s responsibilities with respect to security services include the following:

- Support intrusion detection & prevention including prompt agency notification of such events, reporting, monitoring and assessing security events.
- Support the State IT Security Policy which includes the development, maintenance, updates, and implementation of security procedures with the agency’s review and approval, including physical access strategies and standards, ID approval procedures and a breach of security action plan.
- Managing and administering access to the Operating Software, systems files and the State Data.
- Installing and updating State provided or approved system security Software, assigning and resetting administrative passwords per established procedures, providing the agency access to create administrative user ID’s, suspending and deleting inactive logon IDs, researching system security problems, maintaining network access authority, assist processing of the agency requested security requests, performing security audits to confirm that adequate security procedures are in place on an ongoing basis, with the agency’s assistance providing incident investigation support, and providing environment and server security support and technical advice.
- Developing, implementing, and maintaining a set of automated and manual processes so that the State data access rules are not compromised.
- Where the Contractor identifies a potential issue in maintaining an “as provided” State infrastructure element with the more stringent requirement of an agency security policy (which may be federally mandated or otherwise required by law), identifying to agencies the nature of the issue, and if possible, potential remedies for consideration by the State agency.
- The State shall be responsible for conducting periodic security and privacy audits and generally utilizes members of the OIT Chief Information Security Officer and Privacy teams, the OBM Office of Internal Audit and the Auditor of State, depending on the focus area of an audit. Should an audit issue be discovered the following resolution path shall apply:
- If a security or privacy issue is determined to be pre-existing to this agreement, the State will have responsibility to address or resolve the issue. Dependent on the nature of the issue the State may elect to contract with the Contractor under mutually agreeable terms for those specific resolution services at that time or elect to address the issue independent of the Contractor.
- If over the course of delivering services to the State under this Statement of Work for in-scope environments the Contractor becomes aware of an issue, or a potential issue that was not detected by security and privacy teams the Contractor is to notify the State within two (2) hours. This notification shall not minimize the more stringent Service Level Agreements pertaining to security scans and breaches contained herein, which due to the nature of an active breach shall take precedence over this notification. Dependent on the nature of the

issue the State may elect to contract with the Contractor under mutually agreeable terms for those specific resolution services at that time or elect to address the issue independent of the Contractor.

- For in-scope environments and services, all new systems implemented or deployed by the Contractor shall comply with State security and privacy policies.

The Contractor will comply with State Security and Privacy policies and standards. For purposes of convenience, a compendium of links to this information is provided in the Table below.

State of Ohio Security and Privacy Policies

Item	Link
Statewide IT Standards	http://das.ohio.gov/Divisions/InformationTechnology/StateofOhioITStandards.aspx
Statewide IT Bulletins	http://das.ohio.gov/Divisions/InformationTechnology/StateofOhioITBulletins.aspx
IT Policies and Standards	http://das.ohio.gov/Divisions/InformationTechnology/StateofOhioITPolicies/tabid/107/Default.aspx
DAS Standards (Computing and??)	100-11 Protecting Privacy), (700 Series – Computing) and (2000 Series – IT Operations and Management) http://das.ohio.gov/Divisions/DirectorsOffice/EmployeesServices/DASpolicies/tabid/463/Default.aspx

4. State and Federal Data Privacy Requirements

Because the privacy of individuals’ personally identifiable information (PII) and State Sensitive Information, generally information that is not subject to disclosures under Ohio Public Records law, (SSI) is a key element to maintaining the public’s trust in working with the State, all systems and services shall be designed and shall function according to the following fair information practices principles. To the extent that personally identifiable information in the system is “protected health information” under the HIPAA Privacy Rule, these principles shall be implemented in alignment with the HIPAA Privacy Rule. To the extent that PII is obtained from an “educational record” under the Family Educational Right to Privacy Act (“FERPA”), these principles shall be implemented in accordance with that Act.

All parties to this agreement specifically agree to comply with state and federal confidentiality and information disclosure laws, rules and regulations applicable to work associated with this SOW request including but not limited to:

- United States Code 42 USC 1320d through 1320d-8 (HIPAA); 42 USC 1232g (FERPA)
- IRS 1075 pertaining to FTI data;
- Code of Federal Regulations, 42 CFR 431.300, 431.302, 431.305, 431.306, 435.945,45 CFR164.502 (e) and 164.504 (e); 42 CFR 99.1 through 99.67
- Ohio Revised Code, ORC 173.20, 173.22, 1347.01 through 1347.99, 2305.24, 2305.251, 3319.321, 3701.243, 3701.028, 4123.27, 5101.26, 5101.27, 5101.572, 5112.21, and 5111.61; and
- Corresponding Ohio Administrative Code Rules and Updates.
- Systems and Services must support and comply with the State’s security operational support model which is aligned to NIST 800-53 Revision 3.

4.1. Protection of State Data

Protection of State Data. To protect State Data as described in this agreement, in addition to its other duties regarding State Data, Contractor will:

- Maintain in confidence any personally identifiable information (“PI”) and State Sensitive Information (“SSI”) it may obtain, maintain, process, or otherwise receive from or through the State in the course of the Agreement;
- Use and permit its employees, officers, agents, and independent contractors to use any PI/SSI received from the State solely for those purposes expressly contemplated by the Agreement;
- Not sell, rent, lease or disclose, or permit its employees, officers, agents, and independent contractors to sell, rent, lease, or disclose, any such PI/SSI to any third party, except as permitted under this Agreement or required by applicable law, regulation, or court order;
- Take all commercially reasonable steps to (a) protect the confidentiality of PI/SSI received from the State and (b) establish and maintain physical, technical and administrative safeguards to prevent unauthorized access by third parties to PI/SSI received by Contractor from the State;
- Give access to PI/SSI of the State only to those individual employees, officers, agents, and independent contractors who reasonably require access to such information in connection with the performance of Contractor’s obligations under this Agreement;
- Upon request by the State, promptly destroy or return to the State in a format designated by the State all PI/SSI received from the State;
- Cooperate with any attempt by the State to monitor Contractor’s compliance with the foregoing obligations as reasonably requested by the State from time to time. The State shall be responsible for all costs incurred by Contractor for compliance with this provision of this subsection;
- Establish and maintain data security policies and procedures designed to ensure the following:
 - a) Security and confidentiality of PI/SSI;
 - b) Protection against anticipated threats or hazards to the security or integrity of PI/SSI; and
 - c) Protection against the unauthorized access or use of PI/SSI.

4.1.1. Disclosure

Disclosure to Third Parties. This Agreement shall not be deemed to prohibit disclosures in the following cases:

- Required by applicable law, regulation, court order or subpoena; provided that, if the Contractor or any of its representatives are ordered or requested to disclose any information provided by the State, whether PI/SSI or otherwise, pursuant to court or administrative order, subpoena, summons, or other legal process, Contractor will promptly notify the State (unless prohibited from doing so by law, rule, regulation or court order) in order that the State may have the opportunity to seek a protective order or take other appropriate action. Contractor will also cooperate in the State’s efforts to obtain a protective order or other reasonable assurance that confidential treatment will be accorded the information provided by the State. If, in the absence of a protective order, Contractor is compelled as a matter of law to disclose the information provided by the State, Contractor may disclose to the party compelling disclosure only the part of such information as is required by law to be disclosed (in which case, prior to such disclosure, Contractor will advise and consult with the State and its counsel as to such disclosure and the nature of wording of such disclosure) and Contractor will use commercially reasonable efforts to obtain confidential treatment therefore;
- To State auditors or regulators;
- To service providers and agents of either party as permitted by law, provided that such service providers and agents are subject to binding confidentiality obligations; or
- To the professional advisors of either party, provided that such advisors are obligated to maintain the confidentiality of the information they receive.

4.2. Handling the State’s Data

The Contractor must use due diligence to ensure computer and telecommunications systems and services involved in storing, using, or transmitting State Data are secure and to protect that data from unauthorized

disclosure, modification, or destruction. “State Data” includes all data and information created by, created for, or related to the activities of the State and any information from, to, or related to all persons that conduct business or personal activities with the State. To accomplish this, the Contractor must adhere to the following principles:

- Apply appropriate risk management techniques to balance the need for security measures against the sensitivity of the State Data.
- Ensure that its internal security policies, plans, and procedures address the basic security elements of confidentiality, integrity, and availability.
- Maintain plans and policies that include methods to protect against security and integrity threats and vulnerabilities, as well as detect and respond to those threats and vulnerabilities.
- Maintain appropriate identification and authentication processes for information systems and services associated with State Data.
- Maintain appropriate access control and authorization policies, plans, and procedures to protect system assets and other information resources associated with State Data.
- Implement and manage security audit logging on information systems, including computers and network devices.

4.3. Contractor Access to State Networks Systems and Data

The Contractor must maintain a robust boundary security capacity that incorporates generally recognized system hardening techniques. This includes determining which ports and services are required to support access to systems that hold State Data, limiting access to only these points, and disable all others.

To do this, the Contractor must:

- Use assets and techniques such as properly configured firewalls, a demilitarized zone for handling public traffic, host-to-host management, Internet protocol specification for source and destination, strong authentication, encryption, packet filtering, activity logging, and implementation of system security fixes and patches as they become available.
- Use two-factor authentication to limit access to systems that contain particularly sensitive State Data, such as personally identifiable data.
- Assume all State Data and information is both confidential and critical for State operations, and the Contractor’s security policies, plans, and procedure for the handling, storage, backup, access, and, if appropriate, destruction of that data must be commensurate to this level of sensitivity unless the State instructs the Contractor otherwise in writing.
- Employ appropriate intrusion and attack prevention and detection capabilities. Those capabilities must track unauthorized access and attempts to access the State’s Data, as well as attacks on the Contractor’s infrastructure associated with the State’s data. Further, the Contractor must monitor and appropriately address information from its system tools used to prevent and detect unauthorized access to and attacks on the infrastructure associated with the State’s Data.
- Use appropriate measures to ensure that State Data is secure before transferring control of any systems or media on which State Data is stored. The method of securing the State Data must be appropriate to the situation and may include erasure, destruction, or encryption of the State Data before transfer of control. The transfer of any such system or media must be reasonably necessary for the performance of the Contractor’s obligations under this Contract.
- Have a business continuity plan in place that the Contractor tests and updates at least annually. The plan must address procedures for response to emergencies and other business interruptions. Part of the plan must address backing up and storing data at a location sufficiently remote from the facilities at which the Contractor maintains the State’s Data in case of loss of that data at the primary site. The plan also must address the rapid restoration, relocation, or replacement of resources associated with the State’s Data in the case of a disaster or

other business interruption. The Contractor's business continuity plan must address short- and long-term restoration, relocation, or replacement of resources that will ensure the smooth continuation of operations related to the State's Data. Such resources may include, among others, communications, supplies, transportation, space, power and environmental controls, documentation, people, data, software, and hardware. The Contractor also must provide for reviewing, testing, and adjusting the plan on an annual basis.

- Not allow the State's Data to be loaded onto portable computing devices or portable storage components or media unless necessary to perform its obligations under this Contract properly. Even then, the Contractor may permit such only if adequate security measures are in place to ensure the integrity and security of the State Data. Those measures must include a policy on physical security for such devices to minimize the risks of theft and unauthorized access that includes a prohibition against viewing sensitive or confidential data in public or common areas.
- Ensure that portable computing devices must have anti-virus software, personal firewalls, and system password protection. In addition, the State's Data must be encrypted when stored on any portable computing or storage device or media or when transmitted from them across any data network.
- Maintain an accurate inventory of all such devices and the individuals to whom they are assigned.

4.4. Portable Devices, Data Transfer and Media

Any encryption requirement identified in this Supplement means encryption that complies with National Institute of Standards Federal Information Processing Standard 140-2 as demonstrated by a valid FIPS certificate number. Any sensitive State Data transmitted over a network, or taken off site via removable media must be encrypted pursuant to the State's Data encryption standard ITS-SEC-01 Data Encryption and Cryptography.

The Contractor must have reporting requirements for lost or stolen portable computing devices authorized for use with State Data and must report any loss or theft of such to the State in writing as quickly as reasonably possible. The Contractor also must maintain an incident response capability for all security breaches involving State Data whether involving mobile devices or media or not. The Contractor must detail this capability in a written policy that defines procedures for how the Contractor will detect, evaluate, and respond to adverse events that may indicate a breach or attempt to attack or access State Data or the infrastructure associated with State Data.

To the extent the State requires the Contractor to adhere to specific processes or procedures in addition to those set forth above in order for the Contractor to comply with the managed services principles enumerated herein, those processes or procedures are set forth in this agreement.

4.5. Limited Use; Survival of Obligations.

Contractor may use PI/SSI only as necessary for Contractor's performance under or pursuant to rights granted in this Agreement and for no other purpose. Contractor's limited right to use PI/SSI expires upon conclusion, non-renewal or termination of this Agreement for any reason. Contractor's obligations of confidentiality and non-disclosure survive termination or expiration for any reason of this Agreement.

4.6. Disposal of PI/SSI.

Upon expiration of Contractor's limited right to use PI/SSI, Contractor must return all physical embodiments to the State or, with the State's permission; Contractor may destroy PI/SSI. Upon the State's request,

Contractor shall provide written certification to the State that Contractor has returned, or destroyed, all such PI/SSI in Contractor's possession.

4.7. Remedies

If Contractor or any of its representatives or agents breaches the covenants set forth in these provisions, irreparable injury may result to the State or third parties entrusting PI/SSI to the State. Therefore, the State's remedies at law may be inadequate and the State shall be entitled to seek an injunction to restrain any continuing breach. Notwithstanding any limitation on Contractor's liability, the State shall further be entitled to any other rights or remedies that it may have in law or in equity.

4.8. Prohibition on Off-Shore and Unapproved Access

The Contractor shall comply in all respects with U.S. statutes, regulations, and administrative requirements regarding its relationships with non-U.S. governmental and quasi-governmental entities including, but not limited to the export control regulations of the International Traffic in Arms Regulations ("ITAR") and the Export Administration Act ("EAA"); the anti-boycott and embargo regulations and guidelines issued under the EAA, and the regulations of the U.S. Department of the Treasury, Office of Foreign Assets Control, HIPPA Privacy Rules and other conventions as described and required in this Supplement.

The Contractor will provide resources for the work described herein with natural persons who are lawful permanent residents as defined in 8 U.S.C. 1101 (a)(20) or who are protected individuals as defined by 8 U.S.C. 1324b(a)(3). It also means any corporation, business association, partnership, society, trust, or any other entity, organization or group that is incorporated to do business in the U.S. It also includes any governmental (federal, state, local), entity.

The State specifically excludes sending, taking or making available remotely (directly or indirectly), any State information including data, software, code, intellectual property, designs and specifications, system logs, system data, personal or identifying information and related materials out of the United States in any manner, except by mere travel outside of the U.S. by a person whose personal knowledge includes technical data; or transferring registration, control, or ownership to a foreign person, whether in the U.S. or abroad, or disclosing (including oral or visual disclosure) or transferring in the United States any State article to an embassy, any agency or subdivision of a foreign government (e.g., diplomatic missions); or disclosing (including oral or visual disclosure) or transferring data to a foreign person, whether in the U.S. or abroad.

It is the responsibility of all individuals working at the State to understand and comply with the policy set forth in this document as it pertains to end-use export controls regarding State restricted information.

Where the Contractor is handling confidential employee or citizen data associated with Human Resources data, the Contractor will comply with data handling privacy requirements associated with HIPAA and as further defined by The United States Department of Health and Human Services Privacy Requirements and outlined in <http://www.hhs.gov/ocr/privacysummary.pdf>

It is the responsibility of all Contractor individuals working at the State to understand and comply with the policy set forth in this document as it pertains to end-use export controls regarding State restricted information.

Where the Contractor is handling confidential or sensitive State, employee, citizen or Ohio Business data associated with State data, the Contractor will comply with data handling privacy requirements associated with the data HIPAA and as further defined by The United States Department of Health and Human Services Privacy Requirements and outlined in <http://www.hhs.gov/ocr/privacysummary.pdf>.

4.9. Background Check of Contractor Personnel

Contractor agrees that (1) it will conduct 3rd party criminal background checks on Contractor personnel who will perform Sensitive Services (as defined below), and (2) no Ineligible Personnel will perform Sensitive Services under this Agreement. "Ineligible Personnel" means any person who (a) has been convicted at any time of any criminal offense involving dishonesty, a breach of trust, or money laundering, or who has entered into a pre-trial diversion or similar program in connection with a prosecution for such offense, (b) is named by the Office of Foreign Asset Control (OFAC) as a Specially Designated National, or (b) has been convicted of a felony.

"Sensitive Services" means those services that (i) require access to Customer/Consumer Information, (ii) relate to the State's computer networks, information systems, databases or secure facilities under circumstances that would permit modifications to such systems, or (iii) involve unsupervised access to secure facilities ("Sensitive Services").

Upon request, Contractor will provide written evidence that all of Contractor's personnel providing Sensitive Services have undergone a criminal background check and are eligible to provide Sensitive Services. In the event that Contractor does not comply with the terms of this section, the State may, in its sole and absolute discretion, terminate this Contract immediately without further liability.

4.10. Federal Tax Information

Contract Language for General Services

4.10.1. Performance

In performance of this Contract, the Contractor agrees to comply with and assume responsibility for compliance by his or her employees with the following requirements:

1. All work will be done under the supervision of the Contractor or the Contractor's employees.
2. Any return or return information made available in any format shall be used only for the purpose of carrying out the provisions of this Contract. Information contained in such material will be treated as confidential and will not be divulged or made known in any manner to any person except as may be necessary in the performance of this Contract.
Disclosure to anyone other than an officer or employee of the Contractor will be prohibited.
3. All returns and return information will be accounted for upon receipt and properly stored before, during, and after processing. In addition, all related output will be given the same level of protection as required for the source material.

4. The Contractor certifies that the data processed during the performance of this Contract will be completely purged from all data storage components of his or her computer facility, and no output will be retained by the Contractor at the time the work is completed. If immediate purging of all data storage components is not possible, the Contractor certifies that any IRS data remaining in any storage component will be safeguarded to prevent unauthorized disclosures.
5. Any spoilage or any intermediate hard copy printout that may result during the processing of IRS data will be given to the agency or his or her designee. When this is not possible, the Contractor will be responsible for the destruction of the spoilage or any intermediate hard copy printouts, and will provide the agency or his or her designee with a statement containing the date of destruction, description of material destroyed, and the method used.
6. All computer systems receiving, processing, storing, or transmitting Federal Tax Information must meet the requirements defined in IRS Publication 1075. To meet functional and assurance requirements, the security features of the environment must provide for the managerial, operations, and technical controls. All security features must be available and activated to protect against unauthorized use of and access to Federal Tax Information.
7. No work involving Federal Tax Information furnished under this Contract will be subcontracted without prior written approval of the IRS.
8. The Contractor will maintain a list of employees authorized access. Such list will be provided to the agency and, upon request, to the IRS reviewing office.
9. The agency will have the right to void the Contract if the Contractor fails to provide the safeguards described above.

4.10.2. Criminal/Civil Sanctions

1. Each officer or employee of any person to whom returns or return information is or may be disclosed will be notified in writing by such person that returns or return information disclosed to such officer or employee can be used only for a purpose and to the extent authorized herein, and that further disclosure of any such returns or return information for a purpose or to an extent unauthorized herein constitutes a felony punishable upon conviction by a fine of as much as \$5,000 or imprisonment for as long as 5 years, or both, together with the costs of prosecution. Such person shall also notify each such officer and employee that any such unauthorized further disclosure of returns or return information may also result in an award of civil damages against the officer or employee in an amount not less than \$1,000 with respect to each instance of unauthorized disclosure. These penalties are prescribed by IRCs 7213 and 7431 and set forth at 26 CFR 301.6103(n)-1.
2. Each officer or employee of any person to whom returns or return information is or may be disclosed shall be notified in writing by such person that any return or return information made available in any format shall be used only for the purpose of carrying out the provisions of this Contract. Information contained in such material shall be treated as confidential and shall not be divulged or made known in any manner to any person except as may be necessary in the performance of the Contract. Inspection by or disclosure to anyone without an official need-to-know constitutes a criminal misdemeanor punishable upon conviction by a fine of as much as \$1,000 or imprisonment for as long as 1 year, or both, together with the costs of prosecution. Such person shall also notify each such officer and employee that any such unauthorized inspection or disclosure of the officer or employee (United States for Federal employees) in an amount equal to the sum of the greater of \$1,000 for each act of unauthorized inspection or disclosure with respect to which such defendant is found liable or the sum of the actual damages sustained by the plaintiff as a result of such unauthorized inspection or disclosure plus in the case of a willful inspection or disclosure which is the result of gross negligence, punitive damages, plus the costs of the action. These penalties are prescribed by IRC 7213A and 7431.
3. Additionally, it is incumbent upon the Contractor to inform its officers and employees of the penalties for improper disclosure imposed by the Privacy Act of 1974, 5 U.S.C. 552a. Specifically, 5 U.S.C. 552a(i)(1), which is made applicable to contractors by 5 U.S.C. 552a(m)(1), provides that any officer or employee of a contractor, who by virtue of his/her employment or official position, has possession of or access to agency records which contain individually identifiable information, the disclosure of which is prohibited by the Privacy Act or regulations established thereunder, and who knowing that disclosure of the specific material is prohibited, willfully discloses the material in any manner to any person or agency not entitled to receive it, shall be guilty of a misdemeanor and fined not more than \$5,000.

4.10.3. Criminal/Civil Sanctions

The IRS and the Agency shall have the right to send its officers and employees into the offices and plants of the Contractor for inspection of the facilities and operations provided for the performance of any work under this Contract. On the basis of such inspection, specific measures may be required in cases where the contractor is found to be noncompliant with Contract safeguards

5. Contractor Responsibilities Related to Reporting of Concerns, Issues and Security/Privacy Issues

5.1. General

If over the course of the agreement a security or privacy issue arises, whether detected by the State, a State auditor or the Contractor, that was not existing within an in-scope environment or service prior to the commencement of any Contracted service associated with this agreement, the Contractor must:

- notify the State of the issue or acknowledge receipt of the issue within two (2) hours;
- within forty-eight (48) hours from the initial detection or communication of the issue from the State, present an potential exposure or issue assessment document to the State Account Representative and the State Chief Information Security Officer with a high level assessment as to resolution actions and a plan;
- within four (4) calendar days, and upon direction from the State, implement to the extent commercially reasonable measures to minimize the State's exposure to security or privacy until such time as the issue is resolved; and
- upon approval from the State implement a permanent repair to the identified issue at the Contractor's cost; and

5.2. Actual or Attempted Access or Disclosure

If the Contractor determines that there is any actual, attempted or suspected theft of, accidental disclosure of, loss of, or inability to account for any PI/SSI by Contractor or any of its subcontractors (collectively "Disclosure") and/or any unauthorized intrusions into Contractor's or any of its subcontractor's facilities or secure systems (collectively "Intrusion"), Contractor must immediately:

- Notify the State within two (2) hours of the Contractor becoming aware of the unauthorized Disclosure or Intrusion;
- Investigate and determine if an Intrusion and/or Disclosure has occurred;
- Fully cooperate with the State in estimating the effect of the Disclosure or Intrusion's effect on the State and fully cooperate to mitigate the consequences of the Disclosure or Intrusion;
- Specify corrective action to be taken; and
- Take corrective action to prevent further Disclosure and/or Intrusion.

5.3. Unapproved Disclosures and Intrusions: Contractor Responsibilities

Contractor must, as soon as is reasonably practicable, make a report to the State including details of the Disclosure and/or Intrusion and the corrective action Contractor has taken to prevent further Disclosure and/or Intrusion. Contractor must, in the case of a Disclosure cooperate fully with the State to notify the effected persons as to the fact of and the circumstances of the Disclosure of the PI/SSI. Additionally,

Contractor must cooperate fully with all government regulatory agencies and/or law enforcement agencies having jurisdiction to investigate a Disclosure and/or any known or suspected criminal activity.

- Where the Contractor identifies a potential issue in maintaining an “as provided” State infrastructure element with the more stringent of an Agency level security policy (which may be Federally mandated or otherwise required by law), identifying to Agencies the nature of the issue, and if possible, potential remedies for consideration by the State agency.
- If over the course of delivering services to the State under this Statement of Work for in-scope environments the Contractor becomes aware of an issue, or a potential issue that was not detected by security and privacy teams the Contractor is to notify the State within two (2) hour. This notification shall not minimize the more stringent Service Level Agreements pertaining to security scans and breaches contained herein, which due to the nature of an active breach shall take precedence over this notification. Dependent on the nature of the issue the State may elect to contract with the Contractor under mutually agreeable terms for those specific resolution services at that time or elect to address the issue independent of the Contractor.

5.4. Security Breach Reporting and Indemnification Requirements

- In case of an actual security breach that may have compromised State Data, the Contractor must notify the State in writing of the breach within two (2) hours of the Contractor becoming aware of the breach and fully cooperate with the State to mitigate the consequences of such a breach. This includes any use or disclosure of the State data that is inconsistent with the terms of this Contract and of which the Contractor becomes aware, including but not limited to, any discovery of a use or disclosure that is not consistent with this Contract by an employee, agent, or subcontractor of the Contractor.
- The Contractor must give the State full access to the details of the breach and assist the State in making any notifications to potentially affected people and organizations that the State deems are necessary or appropriate. The Contractor must document all such incidents, including its response to them, and make that documentation available to the State on request.
- In addition to any other liability under this Contract related to the Contractor’s improper disclosure of State data, and regardless of any limitation on liability of any kind in this Contract, the Contractor will be responsible for acquiring one year’s identity theft protection service on behalf of any individual or entity whose personally identifiable information is compromised while it is in the Contractor’s possession. Such identity theft protection must provide coverage from all three major credit reporting agencies and provide immediate notice through phone or email of attempts to access the individuals’ credit history through those services.

6. Security Review Services

As part of a regular Security Review process, the Contractor will include the following reporting and services to the State:

6.1. Hardware and Software Assets

The Contractor will support the State in defining and producing specific reports for both hardware and software assets. At a minimum this should include:

- Deviations to hardware baseline
- Inventory of information types by hardware device
- Software inventory against licenses (State purchased)
- Software versions and then scans of versions against patches distributed and applied

6.2. Security Standards by Device and Access Type

The Contractor will:

- Document security standards by device type and execute regular scans against these standards to produce exception reports
- Document and implement a process for deviation from State standards

6.3. Boundary Defenses

The Contractor will:

- Work with the State to support the denial of communications to/from known malicious IP addresses*
- Ensure that the OAKS network architecture separates internal systems from DMZ and extranet systems
- Require remote login access to use two-factor authentication
- Support the State's monitoring and management of devices remotely logging into internal network
- Support the State in the configuration firewall session tracking mechanisms for addresses that access OAKS

6.4. Audit Log Reviews

The Contractor will:

- Work with the State to review and validate audit log settings for hardware and software
- Ensure that all OAKS systems and environments have adequate space to store logs
- Work with the State to devise and implement profiles of common events from given systems to both reduce false positives and rapidly identify active access
- Provide requirements to the State to configure operating systems to log access control events
- Design and execute bi-weekly reports to identify anomalies in system logs
- Ensure logs are written to write-only devices for all servers or a dedicated server managed by another group.

6.5. Application Software Security

The Contractor will:

- Perform configuration review of operating system, application and database settings
- Ensure software development personnel receive training in writing secure code

6.6. System Administrator Access

The Contractor will

- Inventory all administrative passwords (application, database and operating system level)
- Implement policies to change default passwords in accordance with State policies, particular following any transfer or termination of personnel (State, existing MSV or Contractor)
- Configure administrative accounts to require regular password changes
- Ensure service level accounts have cryptographically strong passwords
- Store passwords in a hashed or encrypted format
- Ensure administrative accounts are used only for administrative activities
- Implement focused auditing of administrative privileged functions

- Configure systems to log entry and alert when administrative accounts are modified
- Segregate administrator accounts based on defined roles

6.7. Account Access Privileges

The Contractor will:

- Review and disable accounts not associated with a business process
- Create daily report that includes locked out accounts, disabled accounts, etc.
- Implement process for revoking system access
- Automatically log off users after a standard period of inactivity
- Monitor account usage to determine dormant accounts
- Monitor access attempts to deactivated accounts through audit logging
- Profile typical account usage and implement or maintain profiles to ensure that Security profiles are implemented correctly and consistently

6.8. Additional Controls and Responsibilities

The Contractor will meet with the State no less frequently than annually to:

- Review, Update and Conduct Security training for personnel, based on roles
- Review the adequacy of physical and environmental controls
- Verify the encryption of sensitive data in transit
- Review access control to information based on established roles and access profiles
- Update and review system administration documentation
- Update and review system maintenance policies
- Update and Review system and integrity policies
- Revised and Implement updates to the OAKS security program plan
- Update and Implement Risk Assessment Policies and procedures
- Update and implement incident response procedures