# Oakland County
# Department of Information Technology
# Project Scope and Approach

**Project Name: Data Center Enhancements** **Project ID:TN0186DE**

| | | | | | |
|---|---|---|---|---|---|
| **Leadership Group:** Information Technology Steering Committee | | | | | |
| **Department:** Information Technology | | | **Division:** Technical Systems and Networking | | |
| **Project Sponsor:** Joe Tabor | | **Date Requested:** 6/15/2020 | | **PM Customer No.** 186 | |
| **Request Type:** New Development | | | | | |
| **IT Team Name:** Workstation Services | | | **IT Team No:** N | | |
| **Project Manager/Leader:** Mike Zemina | | | | | |
| **Account Number:** | 17030 | **Account Description:** | Technical Systems and Networking | **Customer Name:** | Information Technology |
| **Grant Funded?** | No | | **Mandate?** No | | |

## Project Goal

Improve the heating, ventilation and air conditioning system in the Waterford Data Center and develop a long-term plan of improvements so that the Waterford Data Center will be more energy efficient and resilient to various environmental issues.

## Business Objective

Remove legacy cabinets and install partitions to improve heating and cooling efficiency by creating industry standard Hot and Cold isles. Install a Liebert cooling system to improve the redundancy cooling capability of the Waterford Data Center. Also, establish a long-term vision to continue to implement improvements for the Data Center and adjacent rooms planning for floor space, electrical and HVAC capacity and enhancements.

**Major Deliverables**

- Develop a short-term plan with FM&O, HVAC consultant and TSN
- Present plan in Design Review including InfoSec and IT Steering
- Remove the legacy cabinets in the Waterford DC
- Create a diagram demonstrating the configuration for hot and cold isles
- Install spacers in various cabinets to improve temperature control and cooling efficiency
- Initial planning and communication plan for preparation of the installation of the partitions and stand-alone Liebert cooling system in the Waterford DC
- CAB presentation
- Protect/Cover existing equipment in DC
- Electrical and HVAC modifications necessary to accommodate new Liebert system
- Continued meetings to plan for future DC improvements

**Project Name: Data Center Enhancements** **Project ID:TN0186DE**

**Approach**

- Meet with FM&O and HVAC consultant to determine funding allocation
- Meet with FM&O, HVAC consultant and necessary IT personnel to develop a short-term strategy for the implementation of improvements
- Develop communication broadcast (anticipated to be for IT only)
- Present scope of improvements and implementation plan to Design review
- Present scope of improvements to Steering along with the implementation plan
- Remove legacy cabinets that are no longer needed
- CAB presentation
- Protect/Cover existing equipment in DC by using plastic tarps to cover cabinets as needed (Note: This was the process used when the new fire suppression system was installed in the Waterford DC)
- Install the partitions to help promote a more heating and cooling efficient environment
- FM&O and consultant work to install the necessary electrical and HVAC modifications necessary to accommodate new Liebert system (this includes changes to the existing duct work in the Data Center)
- Continued meetings to plan for future DC improvements

## Research & Analysis

**Gartner Research Recommendation:** N/A

Research and analysis is being conducted by IT, FM&O and a third party consultant Hooker and DeJong. Hooker and DeJong is a Building, Data Center and Laboratory HVAC Systems Integration Engineer firm on contract with FM&O.

## Benefits

***See Return on Investment (ROI) Analysis Document***

## Impact

| | |
|---|---|
| **Number of Users** | All customers that utilize the Waterford Data Center services. |
| **Divisions** | ALL |
| **Leadership Groups** | IT |

## Risk

| | |
|---|---|
| **Business Environment** | Low - little or no impact to existing business processes. |
| **Technical Environment** | Medium – previously implemented technologies, new requirements. |

**Project Name: Data Center Enhancements** **Project ID:TN0186DE**

## Assumptions

**Staffing** IT Staffing: resources will be available for the hours indicated per the attached project plan.

Other Staffing: additional staffing will be available as follows:

| Role: | Name |
|---|---|
| Sponsor/ TSN Stakeholder: | Joe Tabor |
| IT Stakeholder: | EJ Widun |
| Security Stakeholder: | TJ Fields |
| CLEMIS Stakeholder: | Jeff Nesmith |
| Internal Services Stakeholder: | Janette McKenna |
| Apps Stakeholder: | Tammi Shepherd |
| EA Stakeholder: | EJ Widun |

**Facilities**

- Maximum of $500,000 Capital Improvement Program (CIP) money to be used for this project, for Hooker and Dejong Consultants, FM&O Wiring. All products and hardware, including labor groups outside IT will coming out of the $500,000 CIP funds.

**Technical**

- Due to the modular design provided by Hooker and DeJong the impact to the existing operation is considered minimal.

**Funding**

- Building improvements, including HVAC related upgrades are funded via FM&O's $500,000 Capital Improvement Program (CIP) money. FM&O is working on allocating funding for the data center improvements. If funding is approved, it is uncertain how much money will be allocated for this Master Plan, but will be no more than the maximum allocated in the FM&O CIP funds.

**Project Name: Data Center Enhancements** **Project ID:TN0186DE**

**Other**

- The existing non-conformance hot-cold isles will be corrected via the removal of the legacy EMC data cabinets. This equipment is end of life and will soon be removed from the Waterford Data Center.

**Priority**

## Constraints

-

## Exclusions

-

# Oakland County
# Department of Information Technology
# Project Scope and Approach

**Project Name: Data Center Enhancements** **Project ID:TN0186DE**

**PROJECT PHASE AUTHORIZATION**

| | | |
|---|---|---|
| **Phase(s): All** | | |
| **Total Estimated Application Services** | **Hours: 150** | |
| **Total Estimated Technical Systems** | **Hours:** 463 | |
| **Total Estimated CLEMIS** | **Hours: 7** | |
| **Total Estimated Internal Services** | **Hours:** | |
| **IT Application Services Division Manager Approval:** | | **Date:** |
| **IT Technical Systems Division Manager Approval:** | | **Date:** |
| **IT CLEMIS Division Manager Approval:** | | **Date:** |
| **IT Internal Services Division Manager Approval:** | | **Date:** |
| **IT Management Approval:** | | |
| Approved: Yes No | | Date: |
| Reason: | | |
| **Project Sponsor Approval:** | | |
| Title: | | Date: |

**PROJECT SUMMARY**

| | | |
|---|---|---|
| **Authorized Development (see above)** | **Hours:** | |
| **Preliminary Estimated Development for Future Phases** | **Hours:** | |
| **Grand Total Estimated Development** | **Hours: 620** | **Cost: $102,300** |

# Oakland County
# Department of Information Technology
# Project Scope and Approach

**Project Name: Data Center Enhancements** **Project ID:TN0186DE**

**PROJECT COMPLETION AUTHORIZATION**

| | |
|---|---|
| **Customer Acceptance of Product:** | |
| Title: | Date: |
| **Project Office Review:** | Date: |

Data Center Enhancements - Size Estimate (+/- 10% to 50%)

| | Type | ID | Task Name | Estimated Hours | Estimate Notes |
|---|---|---|---|---|---|
| 1 | Phase | 000000 | PROJECT MANAGEMENT | 156 | |
| 2 | Phase | 100000 | ANALYSIS PHASE | 354 | |
| 3 | Phase | 200000 | DESIGN PHASE | 44 | |
| 4 | Phase | 300000 | IMPLEMENTATION PHASE | 33 | |
| 1 | | | | 620 | |

# Oakland County-- Data Center Enhancements

Return on Investment Analysis
Project Summary



| Description | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Total |
|---|---|---|---|---|---|---|---|
| **Benefits/Savings:** | | | | | | | |
| Tangible Benefits Subtotal: | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cost Avoidance Subtotal: | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Costs:** | | | | | | | |
| Development Services Subtotal: | 352,300 | 0 | 0 | 0 | 0 | 0 | 352,300 |
| Hardware Subtotal: | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Software Subtotal: | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Infrastructure Subtotal | 250,000 | 0 | 0 | 0 | 0 | 0 | 250,000 |
| Training Subtotal: | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Subtotal: | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Annual Statistics:** | | | | | | | |
| Annual Total Savings | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual Total Costs | 602,300 | 0 | 0 | 0 | 0 | 0 | 602,300 |
| | | | | | | | |
| Annual Return on Investment | (602,300) | | | | | | (602,300) |
| Annual Costs/Savings Ratio | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| **Project Cumulative Statistics:** | | | | | | | |
| Cumulative Total Savings | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative Total Costs | 602,300 | 602,300 | 602,300 | 602,300 | 602,300 | 602,300 | 602,300 |
| | | | | | | | |
| Cumulative Return on Investment | (602,300) | (602,300) | (602,300) | (602,300) | (602,300) | (602,300) | (602,300) |
| Cumulative Cost/Savings Ratio | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| | | | | | | | |
| Year Positive Payback Achieved | | | | | | | NO PAYBACK |
| State or Federal Mandate? | | | | | | | |
| **Signatures:** | | | | | | | |
| | | | | | | | |
| Benefits Reviewed By Project Sponsor | | | | Date: | | | |
| | | | | | | | |
| Costs (including IT Resources) Reviewed By Information Technology Project Manager | | | | Date: | | | |
| | | | | | | | |

# Oakland County-- Data Center Enhancements

As Of: 7/28/2020

Return on Investment Analysis
Savings Detail

| Benefit/Savings Description | Project Savings Category | Budget Category/Funding Source | Unit Desc | Units | Rate per Unit | Total Savings | Annual Multiplier |
|---|---|---|---|---|---|---|---|
| Reduces risk and exposure | Intangible Benefit | | | | | 0 | |
| Better management of risk and complexity through updated infrastructure | Intangible Benefit | | | | | 0 | |
| | | | | | | 0 | |
| | | | | | | 0 | |
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| | | | | | | 0 | |
| | | | | | | 0 | |

# Oakland County-- Data Center Enhancements

As Of: 7/28/2020

Return on Investment Analysis

Savings Detail

| Benefit/Savings Description | Project Savings Category | Affects Project ROI? Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Potential Savings Extensions Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reduces risk and exposure | Intangible Benefit | | | | | | | | | | | | |
| Better management of risk and complexity through updated infrastructure | Intangible Benefit | | | | | | | | | | | | |
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# Oakland County-- Data Center Enhancements

Return on Investment Analysis
Savings Summary



| Benefit/Savings Description | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Total |
|---|---|---|---|---|---|---|---|
| **Tangible Benefit** | | | | | | | |
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| *Tangible Benefits Subtotal:* | | | | | | | |
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| **Cost Avoidance:** | | | | | | | |
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| *Cost Avoidance Subtotal:* | | | | | | | |
| | | | | | | | |
| **Intangible Benefit:** | | | | | | | |
| Reduces risk and exposure | | | | | | | |
| Better management of risk and complexity through updated infrastructure | | | | | | | |
| | | | | | | | |
| **Savings Total:** | | | | | | | |

# Oakland County-- Data Center Enhancements

As Of: 7/28/2020

Return on Investment Analysis
Cost Detail

| Cost Description | Project Cost Category | Budget Category/Funding Source | Unit Desc | Units | Rate per Unit | Total Cost | Annual Multiplier | Affects Project ROI? Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IT Hours - New Development | Development Svcs | Technical Services & Networking | HR | 620 | 165 | 102,300 | | X | | | | | |
| | | | | | | | | | | | | | |
| IT Hours - Customer Support | Development Svcs | | | | 165 | 0 | | | | | | | |
| IT Hours - Planned Maintenance | Development Svcs | | | | 165 | 0 | | | | | | | |
| User Hours - New Development | Development Svcs | | | | | 0 | | | | | | | |
| User Hours - PTNE/OT | Development Svcs | | | | | 0 | | | | | | | |
| Contractor Professional Services | Development Svcs | | EA | | | 250,000 | | X | | | | | |
| PC System - Acquisition | Hardware | | | | 687 | 0 | | | | | | | |
| PC System - Maintenance | Hardware | | | | 2,936 | 0 | | | | | | | |
| Notebook - Acquisition | Hardware | | | | 1,115 | 0 | | | | | | | |
| Notebook - Maintenance | Hardware | | | | 3,024 | 0 | | | | | | | |
| Tablet Notebook - Acquisition | Hardware | | | | 1,421 | 0 | | | | | | | |
| Tablet Notebook - Maintenance | Hardware | | | | 2,800 | 0 | | | | | | | |
| Laserprinter - Acquisition | Hardware | | | | 1,432 | 0 | | | | | | | |
| Laserprinter - Maintenance | Hardware | | | | 1,408 | 0 | | | | | | | |
| PC Maintenance User Owned | Hardware | | | | 2,720 | 0 | | | | | | | |
| Printer Maintenance User Owned | Hardware | | | | 1,264 | 0 | | | | | | | |
| File Space (100GB) | Hardware | | ANN | | 23 | 0 | | | | | | | |
| Package Software - Acquisition | Software | | | | | 0 | | | | | | | |
| Package Software - Maintenance | Software | | | | | 0 | | | | | | | |
| Business Objects Access | Software | | | | | 0 | | | | | | | |
| Term Emulation SFTW-Acquisition | Software | | | | | 0 | | | | | | | |
| Term Emulation SFTW-Maintenance | Software | | | | | 0 | | | | | | | |
| Server - Acquisition/Upgrade | Infrastructure | | | | 8,000 | 0 | | | | | | | |
| Server - Maintenance | Infrastructure | | | | 360 | 0 | | | | | | | |
| Server Sftwre - Acquisition/Upgrade | Infrastructure | | | | 335 | 0 | | | | | | | |
| Server Sftwre - Maintenance | Infrastructure | | | | | 0 | | | | | | | |
| Data Center hardware | Infrastructure | | EA | 1 | 250,000 | 250,000 | | X | | | | | |
| Oracle Enterprise Per Processor - Includes Year 1 Maintenance | Infrastructure | | | | 21,372 | 0 | | | | | | | |
| Oracle Enterprise Per Processor - Year 2 and Beyond | Infrastructure | | | | 3,432 | 0 | | | | | | | |

# Oakland County-- Data Center Enhancements

As Of: 7/28/2020

Return on Investment Analysis
Cost Detail

| Cost Description | Project Cost Category | Budget Category/Funding Source | Unit Desc | Units | Rate per Unit | Total Cost | Annual Multiplier | Affects Project ROI? Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | 24,533 | 0 | | | | | | | |
| SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | 20,759 | 0 | | | | | | | |
| SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | 16,985 | 0 | | | | | | | |
| SQL Server Enterprise - Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond | Infrastructure | | | | 4,218 | 0 | | | | | | | |
| SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | 6,398 | 0 | | | | | | | |
| SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | 5,414 | 0 | | | | | | | |
| SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | 4,429 | 0 | | | | | | | |
| SQL Server - Standard Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond | Infrastructure | | | | 1,100 | 0 | | | | | | | |
| Websphere Basic Per Processor Single/Dual Core - Includes Year 1 Maintenance | Infrastructure | | | | 3,506 | 0 | | | | | | | |

# Oakland County-- Data Center Enhancements

As Of: 7/28/2020

Return on Investment Analysis
Cost Detail

| Cost Description | Project Cost Category | Budget Category/Funding Source | Unit Desc | Units | Rate per Unit | Total Cost | Annual Multiplier | Affects Project ROI? Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Websphere Basic Per Processor Single/Dual Core - Year 2 and Beyond | Infrastructure | | | | 701 | 0 | | | | | | | |
| Websphere ND Per Processor Single/Dual Core - Includes Year 1 Maintenance | Infrastructure | | | | 13,180 | 0 | | | | | | | |
| Websphere ND Per Processor Single/Dual Core - Year 2 and Beyond | Infrastructure | | | | 2,635 | 0 | | | | | | | |
| SSL Certificate | Infrastructure | | | | 845 | 0 | | | | | | | |
| Internet Access | Infrastructure | | | | 180 | 0 | | | | | | | |
| Imperva Web Application Firewall (External Web Applications Only) | Infrastructure | | ANN | | 500 | 0 | | | | | | | |
| App Code Directories on Consolidated IIS Server (Virtual) | Infrastructure | | ANN | | 415 | 0 | | | | | | | |
| Database (5 GB) on Consolidated SQL Instance Server | Infrastructure | | ANN | | 930 | 0 | | | | | | | |
| Database Instance (125 GB DB) on Consolidated SQL Server | Infrastructure | | ANN | | 2,395 | 0 | | | | | | | |
| Database SQL Maint Server | Infrastructure | | ANN | | 834 | 0 | | | | | | | |
| Database SQL Server Physical | Infrastructure | | ANN | | 19,158 | 0 | | | | | | | |
| DB Maintenance (Annual Cycle $610) | Infrastructure | | ANN | | 610 | 0 | | | | | | | |
| DB Maintenance (Semi-Annual Cycle $1220) | Infrastructure | | ANN | | 1,220 | 0 | | | | | | | |
| DB Maintenance (Semi-Annual Cycle $2440) | Infrastructure | | ANN | | 2,440 | 0 | | | | | | | |
| Dedicated Virtual Server | Infrastructure | | ANN | | 4,150 | 0 | | | | | | | |
| DB Instance Setup | Infrastructure | | | | 976 | 0 | | | | | | | |
| DBA MS SQL Database Creation on Exisitng Instance | Infrastructure | | | | 366 | 0 | | | | | | | |
| Extra Small - 2 Core 8GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $601 On Premise Physical Server = N/A | Infrastructure | | ANN | | | 0 | | | | | | | |

# Oakland County-- Data Center Enhancements

Return on Investment Analysis
Cost Detail



| Cost Description | Project Cost Category | Budget Category/Funding Source | Unit Desc | Units | Rate per Unit | Total Cost | Annual Multiplier | Affects Project ROI? Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Small - 4 Core 16GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $951 On Premise Physical Server = $9,288 | Infrastructure | | ANN | | | 0 | | | | | | | |
| Medium - 8 Core 32GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $1,702 On Premise Physical Server = $9,751 | Infrastructure | | ANN | | | 0 | | | | | | | |
| Large - 16 Core 64GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $3,167 On Premise Physical Server = $10,446 | Infrastructure | | ANN | | | 0 | | | | | | | |
| Extra Large - 40 Core 160GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $7,564 On Premise Physical Server = $12,906 | Infrastructure | | ANN | | | 0 | | | | | | | |

# Oakland County-- Data Center Enhancements



Return on Investment Analysis
Cost Detail

| Cost Description | Project Cost Category | Potential Cost Extensions | | | | | |
|---|---|---|---|---|---|---|---|
| | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| IT Hours - New Development | Development Svcs | 102,300.00 | | | | | |
| | | | | | | | |
| IT Hours - Customer Support | Development Svcs | | | | | | |
| IT Hours - Planned Maintenance | Development Svcs | | | | | | |
| User Hours - New Development | Development Svcs | | | | | | |
| User Hours - PTNE/OT | Development Svcs | | | | | | |
| Contractor Professional Services | Development Svcs | 250,000.00 | | | | | |
| PC System - Acquisition | Hardware | | | | | | |
| PC System - Maintenance | Hardware | | | | | | |
| Notebook - Acquisition | Hardware | | | | | | |
| Notebook - Maintenance | Hardware | | | | | | |
| Tablet Notebook - Acquisition | Hardware | | | | | | |
| Tablet Notebook - Maintenance | Hardware | | | | | | |
| Laserprinter - Acquisition | Hardware | | | | | | |
| Laserprinter - Maintenance | Hardware | | | | | | |
| PC Maintenance User Owned | Hardware | | | | | | |
| Printer Maintenance User Owned | Hardware | | | | | | |
| File Space (100GB) | Hardware | | | | | | |
| Package Software - Acquisition | Software | | | | | | |
| Package Software - Maintenance | Software | | | | | | |
| Business Objects Access | Software | | | | | | |
| Term Emulation SFTW-Acquisition | Software | | | | | | |
| Term Emulation SFTW-Maintenance | Software | | | | | | |
| Server - Acquisition/Upgrade | Infrastructure | | | | | | |
| Server - Maintenance | Infrastructure | | | | | | |
| Server Sftwre - Acquisition/Upgrade | Infrastructure | | | | | | |
| Server Sftwre - Maintenance | Infrastructure | | | | | | |
| Data Center hardware | Infrastructure | 250,000.00 | | | | | |
| Oracle Enterprise Per Processor - Includes Year 1 Maintenance | Infrastructure | | | | | | |
| Oracle Enterprise Per Processor - Year 2 and Beyond | Infrastructure | | | | | | |

# Oakland County-- Data Center Enhancements



Return on Investment Analysis
Cost Detail

| Cost Description | Project Cost Category | Potential Cost Extensions | | | | | |
|---|---|---|---|---|---|---|---|
| | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | | | |
| SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | | | |
| SQL Server Enterprise - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | | | |
| SQL Server Enterprise - Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond | Infrastructure | | | | | | |
| SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2016-Aug 2017 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | | | |
| SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2017-Aug 2018 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | | | |
| SQL Server Standard - Per Processor (4 cores) - Purchased Sept 2018-Aug 2019 - Includes Maintenance thru Aug 2019 | Infrastructure | | | | | | |
| SQL Server - Standard Maintenance, Per Processor (4 cores) - Sept 2019 and Beyond | Infrastructure | | | | | | |
| Websphere Basic Per Processor Single/Dual Core - Includes Year 1 Maintenance | Infrastructure | | | | | | |

# Oakland County-- Data Center Enhancements



Return on Investment Analysis
Cost Detail

| Cost Description | Project Cost Category | Potential Cost Extensions | | | | | |
|---|---|---|---|---|---|---|---|
| | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| Websphere Basic Per Processor Single/Dual Core - Year 2 and Beyond | Infrastructure | | | | | | |
| Websphere ND Per Processor Single/Dual Core - Includes Year 1 Maintenance | Infrastructure | | | | | | |
| Websphere ND Per Processor Single/Dual Core - Year 2 and Beyond | Infrastructure | | | | | | |
| SSL Certificate | Infrastructure | | | | | | |
| Internet Access | Infrastructure | | | | | | |
| Imperva Web Application Firewall (External Web Applications Only) | Infrastructure | | | | | | |
| App Code Directories on Consolidated IIS Server (Virtual) | Infrastructure | | | | | | |
| Database (5 GB) on Consolidated SQL Instance Server | Infrastructure | | | | | | |
| Database Instance (125 GB DB) on Consolidated SQL Server | Infrastructure | | | | | | |
| Database SQL Maint Server | Infrastructure | | | | | | |
| Database SQL Server Physical | Infrastructure | | | | | | |
| DB Maintenance (Annual Cycle $610) | Infrastructure | | | | | | |
| DB Maintenance (Semi-Annual Cycle $1220) | Infrastructure | | | | | | |
| DB Maintenance (Semi-Annual Cycle $2440) | Infrastructure | | | | | | |
| Dedicated Virtual Server | Infrastructure | | | | | | |
| DB Instance Setup | Infrastructure | | | | | | |
| DBA MS SQL Database Creation on Exisitng Instance | Infrastructure | | | | | | |
| Extra Small - 2 Core 8GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $601 On Premise Physical Server = N/A | Infrastructure | | | | | | |

# Oakland County-- Data Center Enhancements



Return on Investment Analysis
Cost Detail

| Cost Description | Project Cost Category | Potential Cost Extensions | | | | | |
|---|---|---|---|---|---|---|---|
| | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 |
| Small - 4 Core 16GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $951 On Premise Physical Server = $9,288 | Infrastructure | | | | | | |
| Medium - 8 Core 32GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $1,702 On Premise Physical Server = $9,751 | Infrastructure | | | | | | |
| Large - 16 Core 64GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $3,167 On Premise Physical Server = $10,446 | Infrastructure | | | | | | |
| Extra Large - 40 Core 160GB RAM, 500GB Drive, 10 GB NIC - Cloud/Virtual = $7,564 On Premise Physical Server = $12,906 | Infrastructure | | | | | | |

# Oakland County-- Data Center Enhancements

Return on Investment Analysis
Cost Summary



| Cost Description | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Total |
|---|---|---|---|---|---|---|---|
| **Development Services:** | | | | | | | |
| IT Hours - New Development | 102,300 | | | | | | 102,300 |
| Contractor Professional Services | 250,000 | | | | | | 250,000 |
| | | | | | | | |
| *Development Services Subtotal:* | ***352,300*** | | | | | | ***352,300*** |
| **Hardware:** | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| *Hardware Subtotal:* | | | | | | | |
| **Software:** | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| *Software Subtotal:* | | | | | | | |
| **Infrastructure:** | | | | | | | |
| Data Center hardware | 250,000 | | | | | | 250,000 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| *Infrastructure Subtotal* | ***250,000*** | | | | | | ***250,000*** |
| **Training:** | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| *Training Subtotal:* | | | | | | | |
| **Other:** | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| *Other Subtotal:* | | | | | | | |
| **Costs Total:** | ***602,300*** | | | | | | ***602,300*** |

# Oakland County-- Data Center Enhancements

Return on Investment Analysis

Assumptions



| Date | Assumption Description |
|---|---|
| 27-Jul-20 | Building improvements, including HVAC related upgrades are funded via FM&O's Capital Improvement Projects (CIP) money - $500,000 which will be the maximum used for this effort. FM&O is working on allocating funding for the data center improvements. If funding is approved, it is uncertain how much money will be allocated for this Master Plan. |
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