

*FAC-1 Project Plan
In-House Data Center Project*



Multnomah County

August 26, 2010

FAC-1 Project Plan

Multnomah County In-House Data Center Project

I. Project Requirements

1. Definition

Multnomah County must replace its existing Data Center located in the basement of the Penumbra Kelly Building at 4747 E Burnside because the services provided are currently at risk due to the age, design, and capacity of the facility and the underlying equipment.¹ The facility houses critical telecommunications, computing, and data storage infrastructure that supports the County's networks and business applications that are the backbone of the technology services provided to employees and citizens.²

2. Business Case and Financing

On November 5, 2010 the Office of Information Technology (IT) presented a business case to the Board of County Commissioners for an improved Data Center and to add disaster recovery capability.

On December 3, 2009 the Board of County Commissioners (BCC) approved (by Resolution 09-148) \$3 million in financing for this capital project and issued a full faith and credit bond. Since the issuance of the bond, IT has initiated planning for the Data Center and procured the services of an experienced Data Center consulting firm, PlanNet.

The business case recommended a two-site Data Center model with capacity and services distributed between two locations: a small, ~1,000 sq. ft. County-owned or "in house" Data Center (excluding necessary staff and storage space), and a leased facility. A dozen existing County-owned facilities were considered for the "in house" portion of the Data Center.

3. Potential to Leverage the Data Center and ECC Projects

In June, 2010, after the BCC approved moving forward to complete the Construction Documents and compile the financing package for the proposed East County Courts (ECC) facility, the ECC Project Team, Facilities and Property Management (FPM), and IT began discussions on the potential of locating the County-owned Data Center in the new ECC building. Data Center requirements, preliminary design and cost estimates were developed by the ECC Project Team and compared with the Multnomah County East (MCE) building as a representative comparison of an existing County-owned facility.

4. Proposal

This FAC-1 pertains only to the County-owned Data Center. It seeks approval to locate the County-owned Data Center in the basement of the proposed ECC building. This strategy leverages two Board-approved yet previously separate projects. The idea to incorporate the in-house Data Center into the ECC project occurred somewhat late in the overall ECC project design process. In response, additional resources are being used to advance the design so it can be completed on schedule with the ECC project. Critical information for the Data Center will need to be provided in a timely manner to stay on schedule.

5. Goal

The goal is to provide Multnomah County a cost-effective, secure, and sustainable Data Center to house a significant portion (approximately 50%) of the County's critical telecommunications, computing and storage infrastructure plus 10% new disaster recovery capabilities for the most critical business applications.

The proposed in-house Data Center will include space for up to four existing IT staff, a staff break area, one staff restroom, and storage for materials printed in the Data Center. The new Data Center will be operated with existing staff; no new FTE will be required.

6. Business Functions

The new Data Center will be a major node on the Multnomah County's network. Services to all County departments will be provided from this Data Center either as direct services or disaster recovery services. At least 50% of the County's servers, circuits, and related telecommunications equipment will be housed there plus 10% disaster recovery capabilities for the most critical business applications. Specifics will be determined as the project moves forward.

7. Alignment with County Priorities

- *Building Disposition:* The Penumbra Kelly Building is on FPM's building disposition list due to age and deferred maintenance costs. The approximately 50 IT staff located in the Kelly Building will move to the Multnomah Building in September 2010, after which the 2,800 sq. ft. data center and four staff will be the only remaining County occupants.
- *Sustainability:* If located in the new ECC building, the Data Center will be designed to meet the County's LEED Gold goal and the Architectural 2030 Challenge.
- *Leveraging Technology:* The in-house Data Center will be designed to leverage new technologies that reduce space, cooling, and power consumption resulting in lower operational costs.

II. Project Scope

1. Two-Site Model

On November 5, 2009 the Board was briefed on, and it approved, a two-site Data Center model based on recommendations from a 12-person labor-management work group, research provided by the Uptime Institute (entity that sets industry standards for data centers) and advice from Gartner (leading IT industry research group). The model consisted of the following:

Site 1: County-owned and operated, existing facility capable of handling 50% of the remaining operational load plus disaster recovery capabilities for 10% of our highest priority systems and services.

Site 2: Co-location facility (and/or cloud computing capabilities) capable of handling 50% of the remaining operational load plus disaster recovery capabilities for 10% of our highest priority systems and services.

2. Incorporate Site 1 into the ECC Project

This FAC-1 Project Plan is focused exclusively on Site 1, the in-house Data Center located in a County-owned and operated facility. At the time of the business case presentation, there was not an opportunity to evaluate new construction; therefore, the recommendation assumed that the location of the Data Center would be in an existing county facility.

After April 22, 2010, when the BCC approved moving forward to complete the Construction Documents and to compile a financing package for the proposed ECC building, new construction became a possibility and as previously discussed, the ECC Project Team, FPM, and IT recognized that the two distinct project schedules might permit synergy. We believed it was important to evaluate the viability of incorporating the data center and associated space into the new construction.

This proposal allows the in-house Data Center project to be included with the ECC project when it is presented before the Board of County Commissioners currently scheduled on October 28, 2010 for final approval.

3. Cost Comparisons

The estimated costs presented in the business case were based on industry models for building data centers and utilized a price per sq. ft. for a data center facility only. It was assumed that the data center would be in an existing County-owned facility, that the staff would share existing break room and restroom facilities, and that there would be minimal costs for retrofitting space for up to four cubicles. The estimated costs from the business case specifically for building the data center totaled \$1.430 M.

An initial evaluation was conducted by the ECC Project Team to compare the viability and costs of locating the County's in-house Data Center in the ECC facility versus retrofitting an existing county building. IT and FPM had previously identified a dozen existing buildings as potential sites. Out of these sites, a representative site, MCE was selected and analyzed for comparison purposes. These estimates are more detailed and refined than the models used in the business

case. They include the build out of specific staff and storage space, as well as, construction-related contingencies. The detailed estimated costs (Appendix A) were prepared with IT by the ECC Project Team including:

- Multnomah County Facilities and Property Management
- Project Manager, Steve Cruzen, Shiels Oblatz Johnsen
- LRS Architects
- Howard S Wright Constructors

The total capital costs estimates for the MCE building and the ECC building are similar, \$2.1 M and \$1.94 M respectively, with the primary difference being the ability to leverage project management and other consultants in the ECC building. The hard costs (building and site development) for all three options are similar, business case: \$1.43 M, MCE: \$1.38 M and ECC: \$1.34. The two more detailed cost estimates are both higher than the business case model for three primary reasons: 1) both are detailed cost estimates for specifically identified sites, 2) both include additional square footage for staff and storage and 3) both include standard construction contingencies for estimating, construction, and soft costs which were not included in the business case.

Cost comparisons are presented for locating the County-owned Data Center in the MCE building and the ECC building.

These cost estimates are conservative; they reflect a footprint in the ECC building that is larger than needed. The ECC Data Center footprint and associated costs were based on analysis performed in June 2010 for ~ 2,400 square feet. The Data Center and the adjacent staff work areas, storage and UPS will require closer to a total of 2,000 square feet with the Data Center being ~1,000 square feet. We are currently working on the revisions to both the design and the cost estimates.

In the next couple of months, the ECC Project Team and IT will be working closely with PlanNet, our data center consultant, to refine the Data Center design and validate the cost estimates. These revisions will be presented to the BCC as a part of the ECC presentation currently scheduled for October 28, 2010.

Table 1 on the following page presents the estimated facility charges and debt estimates, as well as, the total capital cost estimates for each location.

Table 1
Estimated Facility Charges, Debt and Capital Costs

Facility Charges and Debt Estimates		Projected MCE +	Projected ECC+
Square Feet of Space		1,870	2,426
General Office Space *	\$6.10	\$11,407	\$14,799
Asset Preservation	\$2.75	\$5,143	\$6,672
Utility **	\$16.62	\$31,079	\$40,320
Total Facilities Charge Estimates:		\$47,629	\$61,790
Debt Payment (Based on Capital Cost Est.)		\$336,969	\$311,450
Total Facility Charges and Debt Estimates:		\$384,597	\$373,240
Capital Cost Estimate		\$2,102,578	\$1,943,348
Term in Years	7		
Interest Rate	2.96%		

* General Office Rate and assumes no Enhanced Custodial, Enhanced Security or Other Client Services

** Based on LEED Gold Rating and Architectural 2030, these costs may be less at ECC

+ Energy Trust of Oregon provides one-time only rebates for energy conservation specifically in data centers.

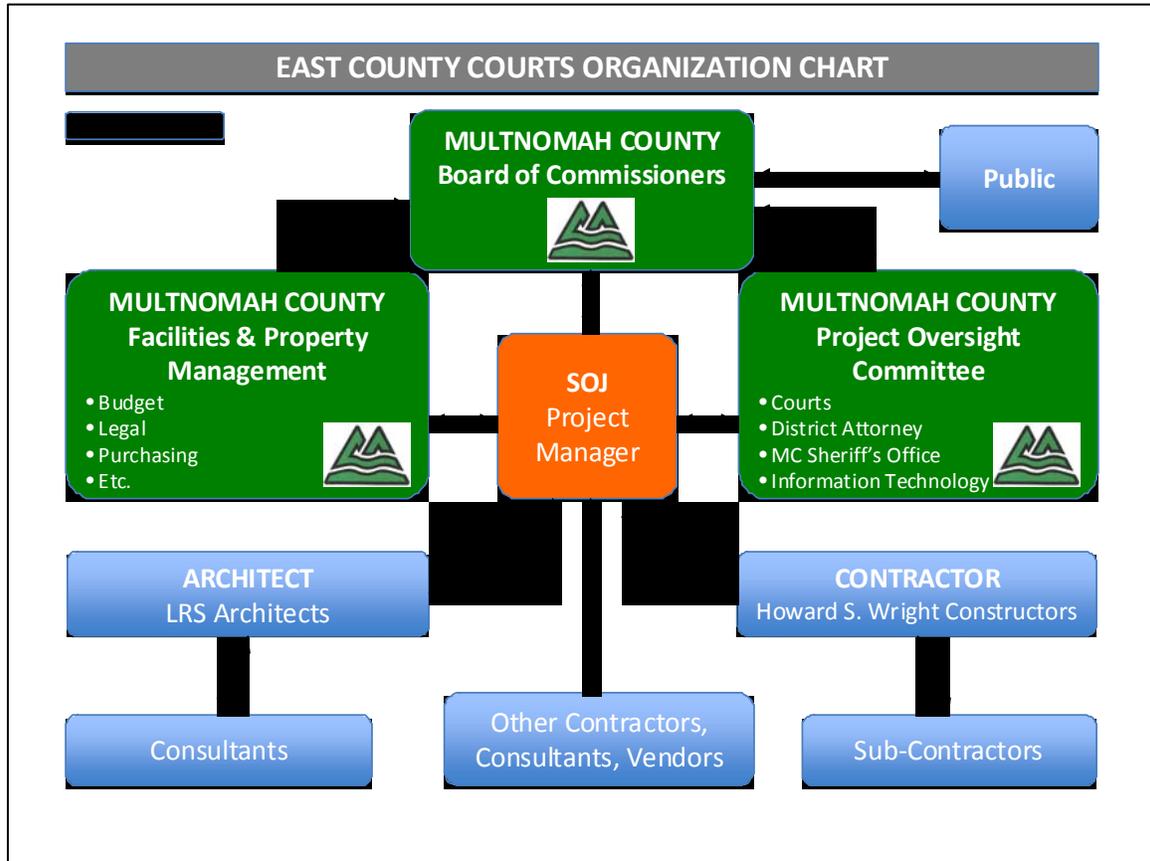
While the costs are comparable, five factors strengthen the case for locating the Data Center in the ECC building. This will allow the county to 1) minimize potential risks of retrofitting an existing building, 2) take advantage of efficiencies by leveraging resources such as project managers, architects, engineers etc., 3) optimize space in the new ECC facility, 4) leverage new technologies that are already identified for cooling and power consumption in the ECC facility, and finally, 5) possibly utilize heat generated by the Data Center's equipment to heat some portion of the rest of the ECC building.

A detailed break out of the MCE and ECC cost estimates are provided in Appendix A – Cost Estimates.

4. Preliminary Design – Preliminary design documents are provided in Appendix B.

5. Project Governance

As shown in the organization chart below, IT will be integrated into the current governance structure as an additional tenant with representation on the Project Oversight Committee.



6. Benefits and Risk Assessment

We feel that the advantages of building the Data Center in the ECC building outweigh the risks. The major risk is cost and schedule overruns of new construction. Since the ECC Project Team is knowledgeable of the project and County criteria and has remained on budget and schedule since the initial approval of the Schematic Design Package on October 1, 2009, we believe this risk can be successfully managed by integrating IT into the already existing structures. In addition, there is already a strong oversight committee in place and a conservative approach to managing the design, estimating and construction. We believe the county will get the most from a sustainability, design and operating efficiency perspective by locating the Data Center in the ECC Building. Benefits and risks for each site are presented below.

East County Courts Building

Benefits

- ECC is a highly secure and monitored facility
- Reduce operating costs based on the operating efficiencies of the new building
- Potential of LEED certification
- Potential to use the heat generated by the Data Center equipment to heat some portion the building
- Project Oversight Committee and other essential infrastructure is already in place to continue the project momentum
- Possibility of having more input and flexibility on the design of the data center and staff space layout in a new building

Risks

- Incorporation into a new construction project has potential cost overruns and schedule delays that impact but are not related to the data center specifically
- Data center will be in basement of the building along with other critical systems requirements of building. Water penetration is a concern
- Because of the location in the basement and where we are in the current design process, the types of new technologies that can be leveraged for cooling and power consumption are currently unknown

Multnomah County East Building

Benefits

- Building has some available space and the potential for retrofit
- Maximize available space capacity in an existing facility

Risks

- Unexpected costs for retrofitting due to uncertainty of unknown constraints internal to building
- Data center requirements could displace other county staff or partners
- Possible restrictions in floor to ceiling height (clearance in ceiling must allow for fire protection piping and cabling)
- Structural requirements to support equipment and cabling may not be met
- Ability to utilize newer “green” technologies may be restricted
- Lack of loading dock area
- Location could present physical security risks
- Availability of IRNE network connectivity may be a risk
- Vibration from the MAX trains may be a risk

7. Conceptual View

A preliminary conceptual view of the new Data Center with associated space located in the basement of the ECC building is presented in Appendix B – Preliminary Designs.

8. Funding Source

The Data Center portion is funded from the full faith credit bond authorized by Resolution No. 09-148 (December 3, 2009). From an accounting perspective, construction costs related to the Data Center will be identified in the construction invoicing. Those costs will settle to the IT funding source using standard functionality within the Multnomah County’s financial system, SAP.

9. Project Charter. The project charter is presented in Appendix C.

10. Project Schedule – The IT project schedule will be integrated into the overall ECC project schedule presented in Appendix D. The related tasks are highlighted in lines 36-40. As noted earlier, the idea to incorporate the Data Center into the ECC project occurred somewhat late in the overall ECC project design process. In response, additional resources are being used to advance the design so it can be completed on schedule with the ECC project. Critical information for the Data Center will need to be provided in a timely manner to stay on schedule.

¹The facility was built as a grocery store in 1959. The data center houses approximately \$2.5 to \$3 M of telecommunications and computing equipment and is rated less than a Tier I on the industry’s scale of I to IV with III being the recommended level for a facility supporting critical business systems.

²There are currently no disaster recovery capabilities in the event that the current data center becomes unavailable for an extended period of time. Should this occur, it could take months and millions of dollars for full capabilities to be restored. In the interim, there would be little or no access to County IT systems.