



City of Gilroy

COMMUNITY DEVELOPMENT DEPARTMENT

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TO: Thomas J. Haglund, City Administrator

FROM: Rick Smelser, City Engineer

DATE: June 8, 2009

SUBJECT: Gilroy Library Design LEED Analysis

Recommendation

It is recommended that the City Council approve, by motion, Gold Plus as the target level of LEED Certification to use while completing the design of the new library.

Background

The current library was constructed in 1975 when the city's population was 15,589. In 2000 the City of Gilroy anticipated reaching General Plan "build-out" (or maximum land use within the City's boundaries according to the new General Plan) by the year 2040. The projected population was expected to increase to approximately 90,305 at General Plan build-out and create significant additional demands on the library and other city facilities. In addition, the library no longer met critical earthquake codes and faced other costly improvements that were not an efficient expenditure for a facility of its size, age and maintenance status. In 2000 the City Council approved a Library Expansion Committee to develop a Master Plan for a new library facility. The committee was later directed to procure grant funding and design services to ultimately construct a new Library Facility. In the fall of 2000, Fields Devereaux, Architects and Engineers, now Harley Ellis Devereaux, Architects and Engineers, were hired to develop the Master Plan and provide these design services.

The Library Master Plan was completed in February 2003. The Master Plan quantified the demands created by a projected growing city population and determined that in order to provide adequate library services to the present city population of more than 51,000 as well as a 2020 population of 69,500, a facility of 53,500 square feet was needed to replace the current Library. It also determined that limited additions would be necessary to continue to meet the space demands beyond 2020. To procure grant funding for ultimate construction of the library, design plans were authorized up to 90% design. The plans were submitted to the State of California for grant funding in three different cycles of the Library Bond Act of 2000 but the state was not able to fund the grant.

In May 2008 the City Council directed staff to take the steps necessary to place a measure on the November 2008 ballot for bond funding. In November 2008 bond funding in the amount of \$37 million to complete the new library design, move the existing library to temporary facilities, demolish the existing library, acquire property and construct additional parking improvements along Dowdy Street and construct a new library facility and library related civic center improvements was approved by the voters in November 2008.

On April 6, 2009 Council approved Harley Ellis Devereaux as a sole source provider for design services to complete their design of the new library which was brought to 90% completion in 2003 and, in order to establish a scope of work for the final design phase of the new library, authorized them to determine what design changes and services would be needed to bring the existing plans into conformance with current codes, Title 24 energy standards, changes in library programs and technology and to perform an analysis of the opportunities and cost benefits related to each level of LEED certification.

After performing new code reviews, new structural code analysis, Title 24 energy calculations and analyses, cost benefit sustainability analyses for each level of LEED and a three part review of library programming, services, and technology needs during the months of April and May, Harley Ellis Devereaux presented their findings to Council on May 18, 2009. The results of their analysis indicated that the initial 90% design effort for the library building was very good and very few new code related design changes were necessary to bring the initial 90% design up to existing standards. In addition, the cost benefit sustainability analyses performed for each of the LEED certification levels revealed that the initial 90% design, with upgrades to meet current code standards and available equivalent materials, is eligible to target certification at the level of LEED Silver. It was noted that a Silver Level LEED certification could be pursued within the revised baseline hard construction cost range of \$22 to \$24 million, excluding “soft” costs such as fees, permits, CM services and additional design services.

The analysis also revealed that with some design enhancements involving storm water management, natural day lighting and mixed mode thermal conditioning to improve performance the initial 90% design would be eligible to target certification at the level of LEED Gold. The total number of targeted attainable points based on these enhancements was determined to be 47. The point range for LEED Gold is 39-51. It was noted that these additional design enhancements were estimated to have hard construction costs in the range of \$350,000 to \$600,000 and could result in significant savings in the cost of energy used to operate the building over its lifetime.

To better quantify the results and determine that the design team was reviewing every possible enhancement to get the best return for the money spent on the project, Council directed staff to review all possible LEED enhancements and report the results to Council on June 8, 2009 for final direction on LEED certification prior to starting final design.

Discussion

The summary below describes each remaining credit beyond the 47 already targeted for certification at the level of LEED Gold. The summary provides the point value of each credit along with estimated capital costs, potential future operational cost savings and commentary on the ability to attain the additional LEED credit. As with the previous LEED Silver/Gold enhancements, the capital costs and potential savings are characterized in order-of-magnitude ranges.

Remaining Sustainable Sites Credits (5 points):

Credit 3 (1 point) – Brownfield Development: The library site is not an existing Brownfield. **This point is not attainable.**

Credit 4.2 (1 point) – Alternative Transportation (Bicycle Storage and Changing Rooms): To attain this credit, the project will have to add two showers and changing rooms (for staff use only). The capital cost is in the range of \$50,000 to \$100,000. There is no future operational cost saving. **This point is attainable.**

Credit 4.4 (1 point) – Alternative Transportation (Parking Capacity): This project provides new additional parking on site. **This point is not attainable.**

Credit 5.1 (1 point) – Site Development (Protect or Restore Habitat): Available space outside the building footprint is not large enough to qualify. **This point is not attainable.**

Credit 5.2 (1 point) – Site Development (Maximize Open Space): Available space outside the building footprint is not large enough to qualify. **This point is not attainable.**

Sustainable Sites remaining points attainable – 1; previous Silver/Gold points attainable – 9; total points attainable: 10. Additional capital costs beyond those in the previous Silver/Gold total: \$50,000 to \$100,000; capital costs in the previous Silver/Gold total: \$150,000 to \$250,000; total additional capital costs: \$200,000 to \$350,000. Additional operational savings: none.

Remaining Water Efficiency Credits (3 points):

Credit 1.1 (1 point) – Water Efficient Landscaping (Reduce by 50%): This credit requires switching to a drip (negligible cost saving) or subsurface (cost increase in the range of \$50,000) drainage system. Operational cost savings of approximately 750 gallons/day of irrigation water. **This point is attainable.**

Credit 1.2 (1 point) – Water Efficient Landscaping (No Potable use): This credit requires installation of a gray water subsurface irrigation system to distribute building gray water. The capital cost is the increase noted for subsurface drainage in Credit 1.1; the operational saving is also noted in Credit 1.1. **This point is attainable in conjunction with Credit 1.1.**

Credit 2 (1 point) – Innovative Wastewater Technologies: This credit is achieved by installing a purple pipe system to collect, store, and process water from building lavatories and showers for distribution via the subsurface irrigation system noted in Credit 1.1. The additional capital cost is in the range of \$50,000 to \$100,000; this system would reduce the cost of irrigation water to \$0. **This point is attainable in conjunction with Credits 1.1 and 1.2.**

Water Efficiency remaining points attainable – 3; previous Silver/Gold points attainable – 2; total points attainable: 5. Additional capital costs beyond those in the previous Silver/Gold total: \$100,000 to \$150,000; capital costs in the previous Silver/Gold total: \$0; total additional capital costs: \$100,000 to \$150,000. Additional operational savings range from approximately 750 to 1,500 gallons per day of irrigation water supply.

Remaining Energy and Atmosphere Credits (4 points):

Credit 2 (3 points) – On-Site Renewable Energy: To attain these points, on-site renewable energy must provide at least 12.5% of projected building energy usage.

There is the opportunity to put approximately 4,500 square feet of photovoltaic panels on the south-facing roof, and an additional 900 square feet on the south courtyard trellis. This total of 5,400 square feet will generate approximately 92 KW. Analysis shows that 92 KW is in the range of 22% of projected building energy usage (assuming implementation of all the sustainability enhancements previously included in the LEED Gold analysis). Total additional capital cost for an installation of this size is in the range of \$900,000 to \$1,000,000. This capital

cost could be partially offset by a one-time California Solar Initiative incentive of \$1.85 per watt generated (as of 6/1/09, for your building type and location). This would total approximately \$170,000. This renewable energy installation would reduce the cost of the energy needed to operate the previously described LEED Gold project by approximately 22%. **These points are attainable.**

Other renewable energy strategies shown below would not provide more than 12.5% of the projected building energy usage and are not deemed appropriate for this project:

Geothermal – is not suitable for a residential area and there is not enough area on the site for the projected size of system needed to realize measurable savings. Site subsurface water is 32' below grade, making drilling for a geothermal system disproportionately expensive relative to the potential energy output. Geothermal systems also require a central plant for conversion and distribution.

Building or Site Integrated Wind Turbines – although the average area wind velocities in Gilroy (14 to 16 mph) are somewhat above the threshold for consideration of this approach, wind turbines dollar for dollar of installed cost typically produce only 6% to 7.5% the KW of photovoltaic installations. In addition, this approach is not suitable for a residential area. Turbine installation would have to be a minimum of 45' to 60' above grade to avoid trees and turbulence, necessitating complex and costly structural and vibration isolation provisions. Furthermore, in small building installations, recent studies show that actual output is 15% to 17% less than manufacturer's projections.

Bio-mass Energy Production – requires additional facilities for source material collection and processing. This resource is most effectively applied to a multi-building installation with a facilities management team dedicated to daily operations and maintenance. This approach is also not suitable for a residential area.

Solar Thermal – the only appropriate use of this technology for a project of this scale would be for hot water heating. While the cost per square foot of a solar thermal system is lower than that of the photovoltaic system, the energy output per square foot is significantly lower, and the net amount of renewable energy produced per available square foot would be significantly reduced. To use this resource for building temperature control would require complete conversion of the building to a piped radiant heating and cooling system. Furthermore, there is not enough available appropriate square footage to generate the required energy output. This approach is not suitable for a residential area.

Credit 6 (1 point) – Green Power: this point requires a minimum two year contract with a Green-certified third party to purchase offsets equal to 35% of projected annual energy usage. There is no capital cost associated with this credit. The operational cost, at current contract rates, is in the range of \$3,000 to \$4,000 per year. This credit can be taken at the end of a project, if an additional credit is deemed necessary. **This point is attainable.**

Energy and Atmosphere remaining points attainable – 4; previous Silver/Gold points attainable – 10; total points attainable: 14. Additional capital costs beyond those in the previous Silver/Gold total: \$730,000 to \$830,000 (after incentive offsets); capital costs in the previous Silver/Gold total: \$50,000 to \$100,000; total additional capital costs: \$780,000 to \$930,000. Additional operational savings include reduction in the cost of the energy needed to operate the previously described LEED Gold project by approximately 22%.

Remaining Materials and Resources Credits (6 points):

Credits 1.1-1.3 (3 points) – Building Reuse: The project does not include any significant reuse of the existing building. No additional capital cost or operational savings. **These points are not attainable.**

Credits 3.1 and 3.2 (2 points) – Materials Reuse 5% and 10%: These points are dependent on contractor's materials sourcing, and cannot be predicted at this time. No additional capital cost or operational savings. **These points are not attainable.**

Credit 6 (1 point) – Rapidly Renewable Materials: These types of materials are not appropriate for this project in quantities that would reach the 2.5% materials cost threshold. **These points are not attainable.**

Materials and Resources remaining points attainable – 0; previous Silver/Gold points attainable – 7; total points attainable: 7. Additional capital costs beyond those in the previous Silver/Gold total: \$0; capital costs in the previous Silver/Gold total: \$0; total additional capital costs: \$0. Additional operational savings: none.

Remaining Indoor Environmental Quality Credits (0 points)

Indoor Environmental Quality remaining points attainable – 0; previous Silver/Gold points attainable – 15; total points attainable: 15. Additional capital costs beyond those in the previous Silver/Gold total: \$0; capital costs in the previous Silver/Gold total: \$150,000 to \$250,000; total additional capital costs: \$150,000 to \$250,000. Additional operational savings: none.

Remaining Innovation & Design Process Credits (1 point):

Credit 1.4 (1 point) – Innovation in Design: This point requires an innovative feature unique to the project. Typically, USGBC awards this point for an owner and/or occupant initiated program. Additional design development is necessary to identify and document an innovative feature unique to the project. **At present this point is not attainable.**

Innovation & Design Process remaining points attainable – 0; previous Silver/Gold points attainable – 4; total points attainable: 4. Additional capital costs beyond those in the previous Silver/Gold total: \$0; capital costs in the previous Silver/Gold total: \$0; total additional capital costs: \$0. Additional operational savings: none.

LEED Points Summary: total remaining points attainable – 8; total previous Silver/Gold points attainable – 47; total LEED points attainable - 55 (including Energy and Atmosphere Credit 6 - Green Power).

Total additional capital costs beyond those noted in the previous Silver/Gold total: \$880,000 to \$1,080,000; total additional capital costs in the previous Silver/Gold total: \$350,000 to \$600,000; total additional capital costs: \$1,230,000 to \$1,680,000. Total operational savings beyond those noted previously for LEED Silver/Gold are in additional savings in water consumption and utility costs as described above.

A LEED Platinum certification requires that a project obtain a minimum of 52 credits by the end of the project. The LEED Green Building Rating System utilizes certain design, construction, and usage criteria that are subject to interpretation by the USGBC in its role as certifier. In addition, achieving the levels of compliance specified involves factors including the Owner's and occupants' use, operation, and

maintenance of the project after completion. Finally, to realize the high level of performance such a project is designed to achieve requires a level of commitment and expertise on the part of all stakeholders, including the contractor and construction manager, which may require they be pre-qualified as part of the selection process.

Project Schedule

Construction of the new library is scheduled to begin in early 2010. Final design is scheduled to occur during the months of July, August and September. City permit review is scheduled to be performed in October, November and December. These design and review periods will provide the highest quality plans possible, the best possible bid period (during the winter) and allow construction to start immediately after the wet season to have the best chance to avoid weather delay. During this final design/review time existing library materials and staff will be relocated to a temporary site and the existing library will be demolished. Construction may be able to start earlier should any of these design, review, and relocation and demolition periods be completed sooner than expected.

Human Resources

It is expected that the Community Development Department will provide full staffing support for all phases of this project including in house permit review and building inspection. A Construction Management Firm will be brought in during the design phase to provide additional design review and construction cost oversight during the design phase and help manage the construction phase of the project. This is a long term (three year) effort that at times will be very staff intensive and may require staff from other departments for site preparation for possible short term book storage at the City Hall Annex and during the final commissioning of the building. Although staffing needs vary the project will require an average of at least one (1) full time employee (FTE) position overseeing the various and ongoing aspects of the project during its term.

Financial Impact

The recommended action does not impose an additional impact on the city's FY 09 budget. The total costs of the library project, including the recommended actions of this report, are within the current \$37 million bond revenue approved by the voters in November 2008.

cc: Kristi Abrams