



City of Del Mar Agenda Report



TO: Honorable City Council Members

FROM: Kristen M. Crane, Management Services Director
Kathleen Garcia, Planning and Community Development Director
Scott W. Huth, City Manager

DATE: March 21, 2016

SUBJECT: Report on Proposed Sustainability Features for City Hall/Town Hall; Authorization to Fund Photovoltaic Panels, Sustainable Water Heating Technology, and Electric Vehicle Chargers; and Direction to Proceed with Vendor Selection

REQUESTED ACTION/RECOMMENDATION:

Staff recommends that the City Council receive this report; provide direction to continue pursuing the recommended sustainability features; authorize use of the City Hall/Town Hall budget funds authorized for sustainability features (\$365,000) for photovoltaic panels, sustainable water heating technology, and electric vehicle chargers; and direct staff to proceed with the selection process for necessary vendors for these items.

DISCUSSION/ANALYSIS:

The City Council has expressed interest in incorporating features that reduce the environmental footprint of the new City Hall/Town Hall. In November 2015, the City Council established a City Council subcommittee (Councilmembers Mosier and Worden) to oversee the evaluation and recommendation process related to this topic. The purpose of this report is to report back to the full City Council on the work of this subcommittee, recommended features to include in the design, and next steps.

Through the design process for the new City Hall/Town Hall, one of the City Council's and community's stated objectives has been creating an environmentally sustainable facility. Initially, there was interest in having the project be eligible for the United States Green Business Council's LEED certification award program (Leadership in Energy and Environmental Design). However, in further exploring the cost and effort required for necessary administrative steps during design and construction to be eligible for LEED certification (such as intense record keeping required during construction), the City Council opted instead to use those funds to invest in design features that would make the facility more environmentally sustainable. The City Council designated

City Council Action:

approximately \$365,000 for this purpose, which is reflected as part of the overall \$17.8 million project budget. Of the \$365,000, it is anticipated that approximately \$350,000 would be used toward construction costs for the sustainability features, while about \$15,000 should be planned to cover design and other soft costs.

The project architect, The Miller Hull Partnership, specializes in architectural designs that maximize environmental sustainability. Additionally, recent changes made in California Building Code laws require that the project be built to CALGreen Building Code Standards, which sets a high bar for the minimum standards for environmental sustainability. In addition, the City Council previously made a policy decision to design the project to meet CALGreen Tier 1 building standards, which sets an even higher standard environmental sustainability.

In addition to the two Council liaisons, participation on the Sustainability Features Subcommittee has also included Andy Friedl (current member of the Sustainability Advisory Board (SAB)) and Bruce Bekkar (current member of the Design Review Board and former member of the Sustainability Advisory Board), along with Planning Director Kathy Garcia and Management Services Director Kristen Crane (staff liaison to the SAB).

As a first step, the Sustainability Features Subcommittee identified their goals for consideration in evaluating potential features, including:

- “Public inspiration” -- Public education value/public demonstration project;
- Environmental stewardship;
- Reducing maintenance costs;
- Providing an employee-friendly work space; and
- Return on investment.

The group’s interests largely focused on minimizing the energy demands for the facility and maximizing generation of solar energy.

This working group met to brainstorm potential ideas of features to include for the project, and also met with the project architect and several applicable subconsultants on the design team (representatives from the mechanical, electrical, and plumbing engineers and the landscape architect). These meetings were very helpful to discuss the potential ideas and how they might or might not work for this project, as well as to hear about the sustainability features already planned for inclusion in the project.

Based on these discussions, Attachments A and B include matrices identifying which sustainability features are included in the design (or are recommended for inclusion in the design) and which concepts are not recommended for inclusion in the design. Many of the concepts suggested by the working group are called for as part of the CALGreen Tier 1 building code standards and are included in the current design at no additional cost.

There are three recommended items that require additional funding, for which staff recommends using the \$365,000 designated by the City Council for sustainability features. These three items are the photovoltaic solar panels (and potentially the batteries to accommodate storage of photovoltaic power in the future); some type of sustainable water heating technology; and electric vehicle chargers. Determining the exact costs for these items will require additional research. Staff recommends proceeding with all three of these concepts as part of the design; meanwhile, staff will also seek grant funding to off-set the cost as necessary.

Examples of features recommended for inclusion in the facility include:

- Photovoltaic solar panels and conduit to accommodate potential for photovoltaic storage batteries in the future;
- Design elements that maximize energy efficiency, such as deep roof overhangs, use of daylight to illuminate the building, and LED lighting;
- A ventilation system that maximizes use of natural ventilation to ventilate the building;
- A green roof over a section of the parking garage (Expansion Area B);
- Dual plumbing to accommodate future use of recycled water if it becomes available in this area of the City;
- Low water use plumbing fixtures and irrigation system;
- Water-wise landscaping;
- Rainwater harvesting and pervious paving which promotes on-site retention of storm water and integration with water-wise landscaping;
- Use of materials made with recycled content, such as carpet and outdoor furniture; and
- Charging stations for electric vehicles and bicycles.

Many of these features are already planned for inclusion in the design by Miller Hull. Some are still being evaluated. If they are considered to be cost neutral, they will be incorporated into the design. The necessary conduit to accommodate these recommendations is accounted for in the design process at no additional substantial cost.

It is envisioned that the facility will also include interpretive signage or brochures that point out the environmentally sustainable features and correlate how they can be incorporated by property owners into commercial and residential projects.

In addition, there were other features that were considered but are not recommended (Attachment B) for inclusion in the project for various reasons (explained on the matrix), namely related to either their viability as realistically beneficial options for the general public and/or their overall potential feasibility for this site.

The City is also in the process of working through the SDG&E Savings by Design Program, which is a free program whereby SDG&E evaluates the proposed facility

design and makes recommendations for maximizing energy efficiency. There are also potential monetary incentives available for incorporating SDG&E's recommendations. This evaluation is expected to be complete during the Construction Documentation phase.

There is strong interest in including photovoltaic panels on the roof of City Hall which is slightly sloped and westward facing. The roof structure is being designed by Miller Hull to accommodate photovoltaic panels. At this point, the next step is to identify a vendor that specializes in solar panels to assist with designing and specifying the requirements of a suitable system. This process will also help clarify what the potential cost for the solar panels will be. Staff is seeking City Council direction to proceed with vendor selection for this service, as well as the other recommended items (sustainable hot water heating and electrical vehicle charging stations).

FISCAL IMPACT:

The City Hall project efforts to date, including design and EIR, are funded in the adopted FY 2015 - 2016 and 2016 – 2017 Operating and Capital Budget. The \$17.8 million budget established by the City Council on November 16, 2015 for the City Hall/Town Hall project includes approximately \$365,000 for sustainability features. Staff recommends that the City Council authorize use of these funds for photovoltaic panels, some type of sustainable water heating technology, and electric vehicle chargers. Staff will continue to also explore grant funds to cover the cost of these items and will report back to City Council on cost information when it is available.

ENVIRONMENTAL IMPACT:

An Environmental Impact Report (EIR) was completed for the City Hall/Town Hall project pursuant to the regulations of the California Environmental Quality Act (CEQA). The proposed recommendations herein are consistent with the EIR.

PRIOR CITY COUNCIL REVIEW:

On November 16, 2015, the City Council established a City Council subcommittee to work on sustainability features for the City Hall/Town Hall.

ATTACHMENTS:

Attachment A – Matrix of Recommended Sustainability Features for City Hall/Town Hall
Attachment B – Matrix of Potential Sustainability Features Not Recommended

Features being Further Considered and/or Already Included in Design

Category	Origin of Idea			Notes	Outcome	Included in Design?	Requirement for Additional Funding?
	Sustainability Sub-Committee Ideas	Miller Hull Suggestions	Common Green Building Best Practices				
Siting and Structure Design Efficiency							
	Green Roof/ Bioretention Roof		Measures to reduce energy consumption by design	Can significantly reduce cooling costs by as much as 25%. Can serve as a large contributor to energy efficiency of buildings.	Architect will look at having the Town Hall Terrace be a "green roof" for the garage (Expansion Area B).	✓	
			Reduced air leakage through the building envelope	Air leakage control is a general best practice in all new construction.	Required per Building Code.	✓	
		Deep Overhangs to limit heat gain	Passive Solar Building Design	Passive solar strategies are the foundation of low energy building designs.	Included in design.	✓	
			Effective window placement (daylighting)	Daylighting helps create a visually stimulating and productive environment for building occupants, while reducing as much as one-third of total building energy costs. Active skylights & daylight-responsive dimming controls.	Included in design.	✓	
Energy Efficiency							
	Solar Hot Water System		Solar Water Heating	Commercial properties qualify for rebates of up to \$800,000 on solar water heating systems (California Solar Initiative CSI-Thermal Program)	<p>Could potentially be a pilot demonstration. Would require space for a tank. May be incentivized through CSE or Savings by Design. Project includes minimal hot water load for lavatories and kitchen.</p> <p>A tankless hot water heater could be an option, however scaling for a project of this size is a concern, as well as ongoing maintenance.</p> <p>Miller Hull is being asked to look at a technology called Sun Earth, Inc. which is an alternative to a tankless solar water heater.</p>	Still being evaluated	Yes
	Photovoltaic Panels	Roof ready for solar	Solar or Wind Energy Generation	SDG&E Center for Sustainable Energy (CSE) works with policymakers, government agencies, utilities, businesses and individuals throughout the state and nationally to drive the adoption of clean energy technologies and practices.	<p>Sustainability Features Subcommittee recommends including necessary stub-outs and other features required to accommodate future PV panels on City Hall roof.</p> <p>Miller Hull will design the roof structure of City Hall to accommodate solar panels. Roof structure will be built by general contractor for the building.</p> <p>The cost for the solar panels will be an additional cost (to be determined). Vendor for solar panels will be separate from general contractor. Vendor to be determined.</p>	✓	Yes
	Battery Storage Capacity for Storing Photovoltaic Energy				<p>Miller Hull will include in the design conduit for stub-outs to accommodate future battery storage for photovoltaic as technology changes and becomes more cost effective.</p> <p>Potential public education opportunity.</p>	Recommended that this be included in the design.	Yes

Features being Further Considered and/or Already Included in Design

Category	Origin of Idea			Notes	Outcome	Included in Design?	Requirement for Additional Funding?
	Sustainability Sub-Committee Ideas	Miller Hull Suggestions	Common Green Building Best Practices				
	Motion Activated LED for Pedestrian and Parking Garage		Lighting & Electricity Use	Lighting designers should plan lighting circuits and switching schemes in relation to fenestration. With advanced lighting controls, it is now possible to adjust the level of electric light when sufficient daylight is available. Specifying a high quality energy efficient lighting system that utilizes both natural and electric sources as well as lighting controls can provide a comfortable yet visually interesting environment for the occupants of a space.	All interior and exterior lighting will be LED. Project also includes photo cells and motion sensors inside.	✓	
		Variable Refrigerant Flow (VRF) HVAC System		Increases cooling pump efficiencies. Must also consider a significant causes of moisture accumulation in buildings in hot, humid climates is an overemphasis on ventilation at the expense of proper dehumidification. Relative humidity (RH) averages 69 percent at San Diego on an annual basis.	The project design includes a Variable Refrigerant Flow (VRF) HVAC system design.	✓	
		Natural Ventilation		Automatic actuators at high windows, manual operation with indicator lights for lower windows) Need additional sensors and advanced controllers to manage temps.	Natural ventilation is included as a component of the project design.	✓	
		Energy Star Certified Appliances		The 43-page ENERGY STAR Guidelines for Energy Management contains a step-by-step road map for continuous improvement, based on best practices from the nation's leaders in energy management.	The project will include Energy Star appliances as applicable.	✓	
Water Efficiency							
			Point of use heating	Electric tankless water heaters potentially offer elimination of standby losses when used in place of storage tank hot water systems. However, electric tankless water heaters can potentially increase electricity demand as well.	See notes above regarding solar hot water heater system.	Still being evaluated	Yes
	Use of Purple Pipe Recycled/Reclaimed Water			Explore feasibility of connecting the site to the City's recycled water system for use on-site for landscape irrigation and toilet flushing.	Recycled water is not currently available in this area, though there is the potential for future expansion of the recycled water system along Camino Del Mar. The current project design includes dual-plumbing to accommodate an easy switch to recycled water if/when it becomes available to be used for landscape irrigation and toilet flushing.	Dual plumbing is included in design	Yes, for bringing recycled water to the site
		Low-flow water fixtures throughout the site/facility	Water Conserving Fixtures	Installing low-flow fixtures and aerators saves water and money. Aerators for faucets and showers require an initial capital investment, but they often pay back the investment in less than a year, especially when they are used often.	Included in the design for indoor appliances and landscape irrigation.	✓	

Features being Further Considered and/or Already Included in Design

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	Sustainability Sub-Committee Ideas	Miller Hull Suggestions	Common Green Building Best Practices				
	Rainwater Harvesting			Any building with a large square foot roof and high demand for non-potable water is a top priority candidate for rainwater harvesting. Rainwater harvesting means capturing rainwater from the roof and site for reuse for landscape irrigation. Rainwater harvesting is likely to be the least expensive component of new building construction. Commercial systems make use of the same ideas as home systems, with certain parts sized to meet the needs of the property.	<p>The project design includes a rain gutter system on the building roofs that will collect rainwater and pipe it directly into landscaped planter areas on the site. This design eliminates the need for a separate storage, pump, and other plumbing requirements.</p> <p>The concept of a rainwater cistern was evaluated but is not considered feasible for this site based on storage, pumping, and plumbing requirements to connect the cistern to the irrigation system and timing for when rainwater is generated versus when the landscape needs to be irrigated.</p> <p>The rain gutter system direct connection to the landscaped planter areas can be a public education/demonstration feature for the site.</p>	✓	
	Drought Tolerant Grasses	Drought Tolerant Landscape Design		50-75% of California potable water use is devoted to landscape irrigation. Additional related strategies include keeping more rainwater on site (rainwater harvesting), creating landscapes that require less water, and making irrigation systems more efficient.	Project landscape design includes water wise plants, water-efficient landscape practices, and high-efficiency landscape irrigation equipment. Proposed grasses for the landscape are a drought tolerant, non-mowable variety.	✓	
		Pervious Paving		Pervious pavements allow stormwater to filter through voids in the pavement surface into an underlying rock reservoir where it is temporarily stored and infiltrated into the surrounding materials.	Pervious paving is being used in surface parking lot.	✓	
Materials Efficiency							
		Wood Construction and Wood Siding	Lumber from Certified Forests	Today there are more than 50 certification programs worldwide addressing the many types of forests and tenures around the world. The two largest international forest certification programs are the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC).	<p>Miller Hull is looking at wood framing using FSC lumber (would potentially be more expensive; could have a sign as a public education/demonstration feature).</p> <p>For the wood cladding, Miller Hull is looking at a variety of composites.</p>	Still being evaluated	To be determined
	Use of Recycled Concrete		Recycled Stone & Metal	Crushed recycled concrete can also be used as the dry aggregate for brand new concrete if it is free of contaminants. Also, concrete pavements can be broken in place and used as a base layer for an asphalt pavement through a process called rubblization.	<p>Miller Hull will explore options for this.</p> <p>Will look into this for demolition.</p>	Still being evaluated	To be determined
		Focus on long-lasting, low maintenance materials			Project design includes Ipe wood as a wood finish, which is long-lasting, low-maintenance.	✓	
	Environmentally-Friendly Carpet				Proposed carpet specification is made using 100% recycled material. Subcommittee recommendation to balance "green carpet" with "squeaky," which is sometimes a side effect of recycled-content carpet.	✓	
		Linoleum Flooring		Green flooring is non-toxic, environmentally-friendly and made from sustainably harvested, recycled or reclaimed sources.	Included in the design.	✓	

Features being Further Considered and/or Already Included in Design

Category	Origin of Idea			Notes	Outcome	Included in Design?	Requirement for Additional Funding?
	Sustainability Sub-Committee Ideas	Miller Hull Suggestions	Common Green Building Best Practices				
Indoor Environmental Quality Enhancement							
			Reduced use of VOC-emitting products	High concentrations of VOCs are known to cause a number of health problems, including eye and throat irritation, headaches, and damage to the liver and nervous system. Consider purchasing products that have been certified by Green Seal.	Included per CalGreen building standard.	✓	
			Hypoallergenic Flooring (hardwood, vinyl, linoleum, tile or slate flooring instead of carpet)	The number and variety of sustainable flooring materials is in a state of flux with new daily offerings from manufacturers and an equally wide range of applications and user experiences to consider and digest. Marmoleum- natural linoleum is bio-based, highly durable, non-toxic, anti-microbial and easy to maintain.	Miller Hull will consider this.	If this design feature is cost neutral, this will be incorporated into design.	To be determined
	Daylighting with Roof Skylights				Project includes use of daylighting and clear story windows. Miller Hull will also look at possible use of controllable skylights for enclosed offices and conference rooms.	✓	
		FSC Certified Wood for site furnishings		Chain-of-custody certification from the Forest Stewardship Council, demonstrates wood used comes from sustainably managed forests. The certification, granted by Scientific Certification Systems (SCS), an independent third party, ensures the company meets the FSC tracking requirements to verify its wood products are sourced responsibly.	Some proposed materials are made with recycled content.	✓	
Operations and Maintenance Optimization							
			Green Practices for Cleaning	Many cleaning products contain chemicals and compounds that can harm people and the environment while contributing to indoor air pollution. Utilize green cleaning products and materials to improve indoor air quality, shrink resource consumption, and reduce waste.	Operational item to be considered as project progresses.	Not design related	To be determined
			Education of Building Operators and Occupants	The answer to what makes a product "green" can be complicated. Consider the multiple potential impacts to human health and the environment throughout the product's life cycle — from product raw material extraction to manufacture through use and disposal.	Project design will include signage to educate visitors on environmentally-friendly features of design.	Interpretive signage will be included later in the process	To be determined
Waste reduction							
		Construction Waste Recycling	Reduce waste during construction	Proposal is to set a goal of 75%. Cal-Green Building Code requires 50%. Construction and demolition (C&D) materials consist of the debris generated during the construction, renovation, and demolition of buildings, roads, and bridges. Reducing and recycling C&D materials conserves landfill space, reduces the environmental impact of producing new materials, creates jobs, and can reduce overall building project expenses through avoided purchase/disposal costs.	Will be considered as part of the demolition process for the existing facility. Due to concerns related to the age of the building and abatement needs, there are some concerns about the ability to recycle elements of the existing buildings and/or that the expense will be cost prohibitive.	If this is cost neutral, this will be incorporated into the process.	To be determined
	Tree Planting for Carbon Offset/Sequestration			Studies have identified several optimal tree species for carbon storage, and botanists continue to experiment with new hybrids.	Project landscape design includes trees.	✓	
Other							
	EV Charging Stations	Electric Vehicle Changing Stations		Technologies for charging stations range from simple "plug and charge" standalone units that are open to all users, to networked units with automated user ID and payment systems.	Project design includes 10 electric vehicle chargers to serve 20 parking spaces.	✓	Yes

Features being Further Considered and/or Already Included in Design

Category	Origin of Idea			Notes	Outcome	Included in Design?	Requirement for Additional Funding?
	Sustainability Sub-Committee Ideas	Miller Hull Suggestions	Common Green Building Best Practices				
	EV Bike Charging Stations			Example: EVO-Bike' is supplied with reinforced concrete bases, therefore the installation needs no anchoring to the ground. The charge of the bikes is carried out at low voltage using the supplied battery chargers of the bikes, previously integrated in the structure of the charger.	Project design will include a charging station for electric bicycles located adjacent to bike racks.	✓	Yes
		Preferred parking for fuel-efficient vehicles		Vehicles that achieve a minimum designated city fuel economy or EPA Smog Rating could be eligible for a special parking permit that allows free parking.	Operational item to be considered as project progresses.	Not design related	
	Green Construction Provisions			Inform construction contractors regarding Del Mar's "no idling" law and require use of clean diesel fuel for construction vehicles.	Informational item for construction contractor.	Not design related	To be determined
	Interpretive Signage			Project design should include interpretive signage that explains the sustainability features included.		Interpretive signage will be included later in the process	Yes

Proposed Sustainability Features for City Hall/Town Hall Project

Features No Longer being Considered

Category	Origin of Idea			Notes	Outcome	Included in Design?
	Sustainability Sub-Committee Ideas	Miller Hull Suggestions	Common Green Building Best Practices			
Energy Efficiency						
	Wind Energy Generation			Wind turbines generate significant noise and vibration. Installation increases costs significantly. Wind swirling by tall buildings is highly turbulent; turbines don't like turbulence; they do much better with like laminar wind flow.	Wind on the site is not at a level that makes sense for these to really work well. Concerned about the height limit. Not seen as a viable option for private property owners so therefore not as high in value as a public demonstration project.	No
	Geothermal Energy			Explore the feasibility of using geothermal energy. Would require advance site work to research the feasibility and site work. Concerns about the up-front costs for an HVAC system powered with geothermal as opposed to an HVAC system powered with VRF (as proposed).	Not cost efficient	No
		Chilled Beams		Pipes of water in ceiling increase cooling efficiencies. Use of units that by convection from a finned heat exchanger cool the air in a room. since a chilled beam (whether passive or active) typically does not contain a condensate drainage system, the primary air system must also maintain the dew point of the indoor air below the surface temperature of the chilled beam to avoid moisture from condensing on the coil and dripping into the space.	This was looked at as a possibility for the project, however the size of the system necessary for the project was too small, so therefore, it doesn't make sense.	No
		Radiant Heating			Determined to not be an option based on concerns of running the system in the slab (which is the parking garage roof) balanced with the long-term benefits.	No
		Push-Pull Ventilation System		Could eliminates duct work in parking garage. Incoming air pipe system with long-range nozzles. Extraction pipe system with intake vents.	This was looked at as a possibility for the project, however determined to not be a viable option for the needs of the design.	No

Proposed Sustainability Features for City Hall/Town Hall Project

Features No Longer being Considered

Category	Origin of Idea			Notes	Outcome	Included in Design?
	Sustainability Sub-Committee Ideas	Miller Hull Suggestions	Common Green Building Best Practices			
Water Efficiency						
	Graywater	Graywater for Irrigation	Graywater Reuse	<p>Graywater systems allow for reuse of certain types of water (from lavatory sinks and showers) to reduce potable water consumption for toilet flushing and irrigation.</p> <p>Graywater recycling systems include in-ground holding tanks and require dual plumbing systems for potable and graywater. May require in-ground lift stations, above-ground dual pressure filters, a water management processor with a dedicated pump, a variable frequency, constant pressure graywater pumping system, pressure filter alarms, and an integrated monitoring and controller processor control system.</p>	Use of graywater for landscape irrigation was explored as a possibility for this project, however it is not recommended for several reasons. The graywater system design would require separate plumbing to collect water from allowable sources, storage (and a location to place the storage container), pumping, and filtration in order to use the graywater for landscape irrigation. Graywater generated on-site could only be from bathroom sinks and showers. Another concern is that the volume of water that would be generated from these sources, balanced with the amount of water required for landscaping and the necessary cost to maintain the system on an ongoing basis, make this concept not worthwhile for this project.	No
Indoor Environmental Quality Enhancement						
			Personal temperature and airflow control	Stream air directly to individual workstations - usually through nozzles on the desks or plenums under the floors - and allow occupants to control the temperature and airflow where people sit	This idea is not compatible with the proposed HVAC system.	No
	Large Ceiling Fans			High-volume/low-speed (HVLS) ceiling fans, maximize the efficiency and performance of air movement and — as a result — help cut energy usage and create more comfortable and productive working environments year-round.	Large ceiling fans do not work with proposed HVAC system because the proposed system is designed to push hot air up and out through high level windows that open mechanically.	No
Waste Reduction						
	Organics Recycling		Composting On-site	Composting turns feedstock from your office into a product useful for gardening, landscaping or fertilizing office plants. Through decomposition of organic materials, composting systems divert office waste from the waste stream and turns it into a dark, loose, soil-like material.	Not practical considering the anticipated volume of green waste (based on proposed landscaping style) and anticipated food waste.	No