VII. STANDING COMMITTEES

B. Finance, Audit and Facilities Committee

UW's Energy Future

INFORMATION

This presentation is for information only.

BACKGROUND

The UW is the sole existing equity investor in the largest district thermal energy system in the Pacific Northwest currently serving 174 individual UW buildings with total of 13.4M square feet served by steam and 7.3M square feet served by cooling. A district thermal energy system distributes heating (in the form of hot water or steam) and cooling (in the form of cooling water) from one or a series of highly efficient energy resource centers to individual buildings through a network of pipes. Thermal energy systems are not regulated utilities - unlike natural gas and electrical energy systems. The three major components of the UW District Energy system include: (1) energy resource center(s) which produce heating and cooling water; (2) a system of pipes to distribute the heating and cooling water between the energy resource center(s) and individual UW buildings ; and (3) the interface between the district distribution system with heating and cooling distribution within an individual building.

Transformation of Business as Usual: District Energy supports more effective customer service and more efficient operations and maintenance costs; reduces capital and operating risks as capital investment and operating and maintenance costs of individual building heating and cooling systems are much more limited; costs are more predictable and managed more effectively given the increasingly dynamic changes in energy commodities and technologies, is more reliable, is more energy efficient than individual building systems, provides fundamental cost advantages in the ability to implement diverse and emergent cost-competitive technologies - such as deep lake water cooling - due to economies of scale, reduces overall costs due to system-based diversity in the UW building energy-load portfolio – due to research buildings, clinical facilities, classroom buildings, residential buildings operating at different thermal load which results in shared energy resources to more efficiently balance energy demand.

The Challenge: Brand-new District Energy systems tend to require front-end loading of capital more so than individual building systems. More capital is typically invested earlier before growth of the system enables full beneficial use of the technologies installed that create the heating and cooling energy resources. A phased development approach can assist in mitigating, but not eliminating this

VII. STANDING COMMITTEES

B. Finance, Audit and Facilities Committee

UW's Energy Future (continued p. 2)

challenge. For the UW - with our mature existing system – our immediate challenges include (1) reduction of state capital resources traditionally relied upon to fund accelerating deferred maintenance of our district energy system asset, and (2) the need to transition our existing steam and chilled water energy resource centers to service existing and future customers with greater energy resource and operational efficiencies, to create greater diversity of energy resources allowing UW to be more resilient given anticipated future energy market fluctuations, and likely regulatory requirements for increased utilization of carbon smart resource technologies.

UW's Energy Future: A UW work group has been exploring potential opportunities which might allow the UW to recapitalize and potentially expand our valuable District Energy asset – with equity partners - to serve our current needs and meet the significant development in and around the UW Seattle campus and within the region over the next 20 years in the context of:

- Our academic, research, and clinical missions
- Present economic environment
- Campus renewal and growth
- Deferred maintenance
- Environmental sustainability
- Risk
- Our contribution to community and regional development

Attachment
UW's Energy Future: Enhancing the Mission

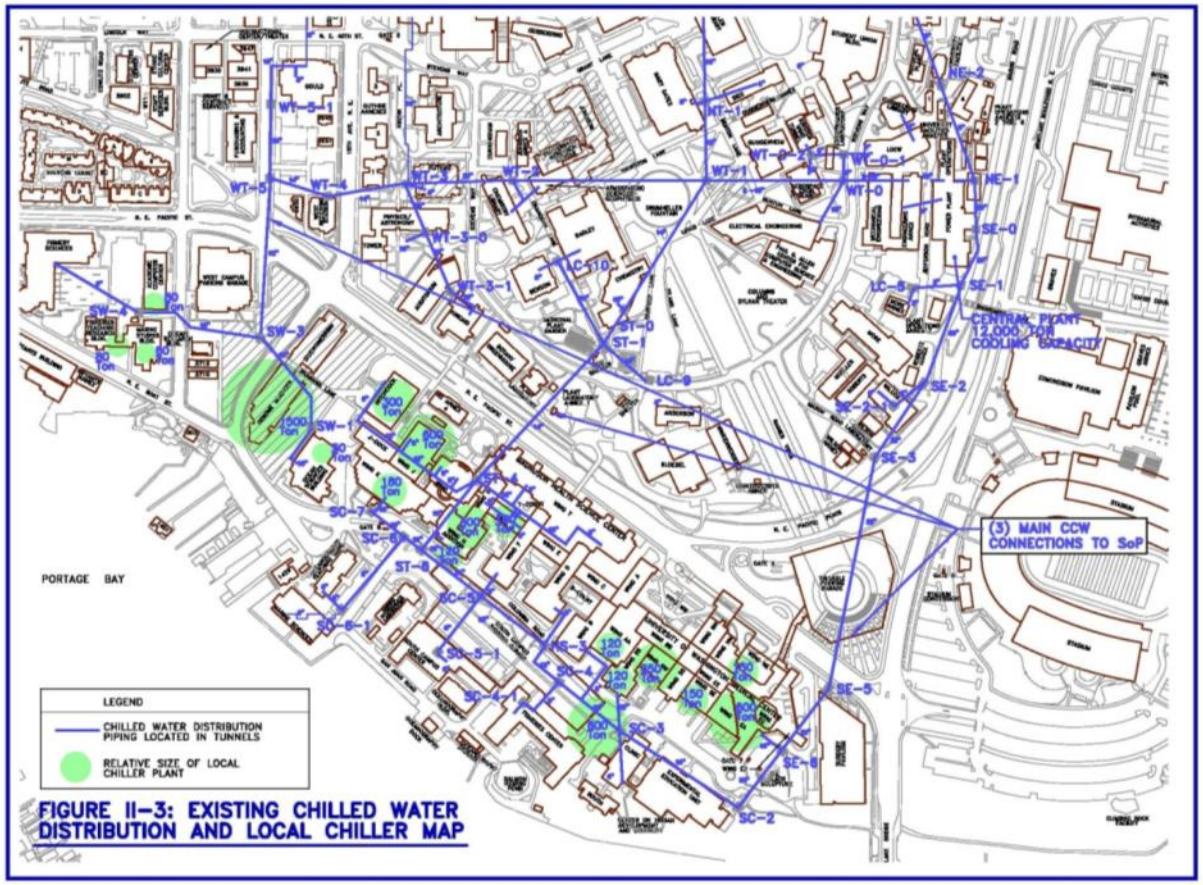
UNIVERSITY OF WASHINGTON

UW's Energy Future: Enhancing the Mission

BOR PRESENTATION | March 8, 2012

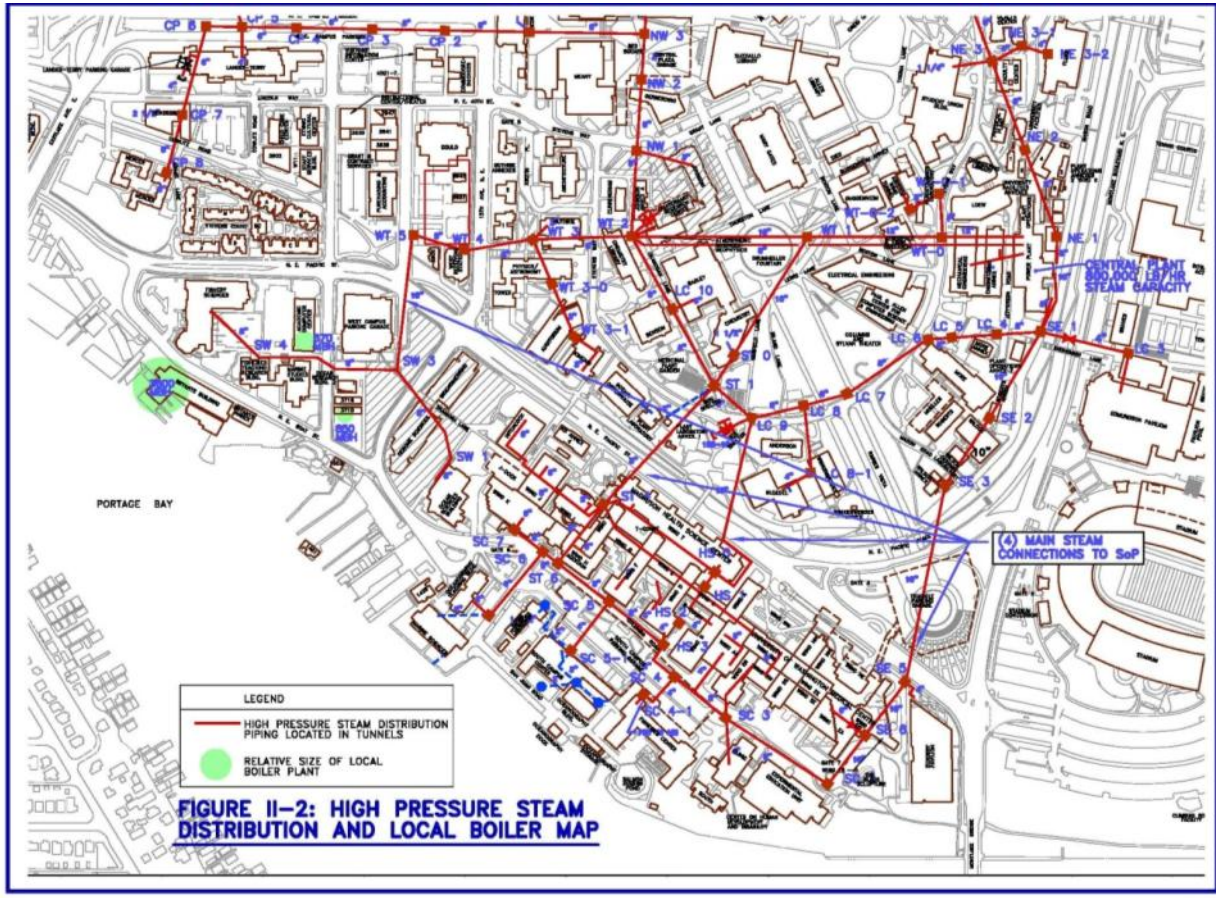
Existing UW District Energy Assets

Chilled Water Distribution



Existing UW District Energy Assets

Steam/Hot Water Distribution



District Energy Assets & UW's Energy Future

- The University of Washington is the sole equity investor in **one of the largest district energy systems in the Pacific Northwest**.
- The UW district energy utility **system currently serves 174 UW buildings**, providing steam to 13.4M SF and chilled water to 7.3M SF.
- Over the next 30 years, **substantial additional growth is planned to serve new heating and cooling needs** for energy-intensive laboratory, teaching, and housing.
- UW faces a $750M – $1B infrastructure capital renewal challenge - **district energy is a global business sector with many successful private sector developers, investors.**

UW's District Energy Immediate Challenges

- **System capacity constraint** with existing UW thermal heating/cooling and electrical load distribution; and acceleration of individual building cooling systems
- **State capital funding no longer available** to support major district-wide infrastructure improvements or building systems infrastructure renewal – UW's historic capital infrastructure fund source is declining.
- **Risk management mitigation strategy required** to support the teaching, research, missions – particularly to mitigate increasing risks to system reliability - while creating opportunities to provide energy-efficient energy to meet mission-critical UW research and clinical activities now and in the future.
- **Pathway to a "Carbon Smart UW"** as an enhancement of our 21st Century commitment to community engagement with the City of Seattle, King County, State of Washington, and our neighbors

UW's District Energy Opportunities

Deploy a Comprehensive Energy Infrastructure Reinvestment Strategy with Partners

- Energy rate stability with diverse technologies/energy sources – including wind power storage, thermal solar, geothermal, deep lake cooling, regional bio refinery, sewer heat recovery, fuel cell technologies.
- Enhance energy efficiency and environmental stewardship
- Mitigate performance risks by high reliability
- Build on existing outstanding customer service

Lower Long-Term UW O&M costs for current ~18M SF assets

Revenue Enhancement Opportunities

- Leverage existing asset with equity partners
- Fund source for recapitalization of UW infrastructure and other UW capital needs
- Central regional location with potential to provide services beyond UW

Potential to Attract Research Partners

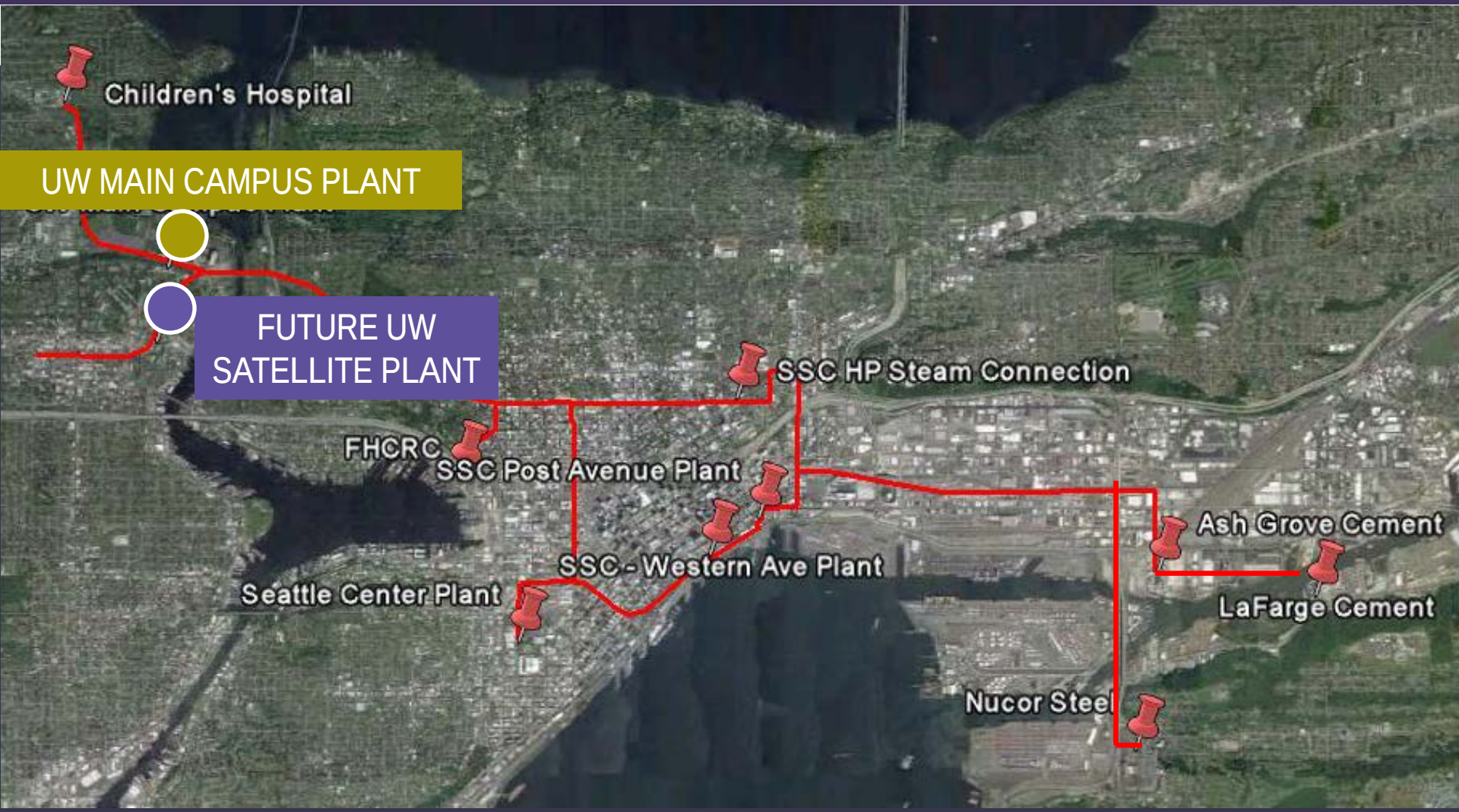
- Global district energy private sector and public sector investment may view UW and a new regional district energy infrastructure as a financially viable commercialization/research opportunity

Reduced First-Cost Capital and Life Cycle Costs

- Improved building net to gross space utilization
- Reduced $/SF capital cost for new and renovated buildings
- Reduced $/SF operating cost for new and renovated buildings

UW Teaching/Research Program Opportunities for the Colleges of Arts & Sciences, Built Environment, Engineering, Public Health, Social Work, and College of the Environment

Future Seattle Regional District Energy System?



UW's Energy Future - Key Goals

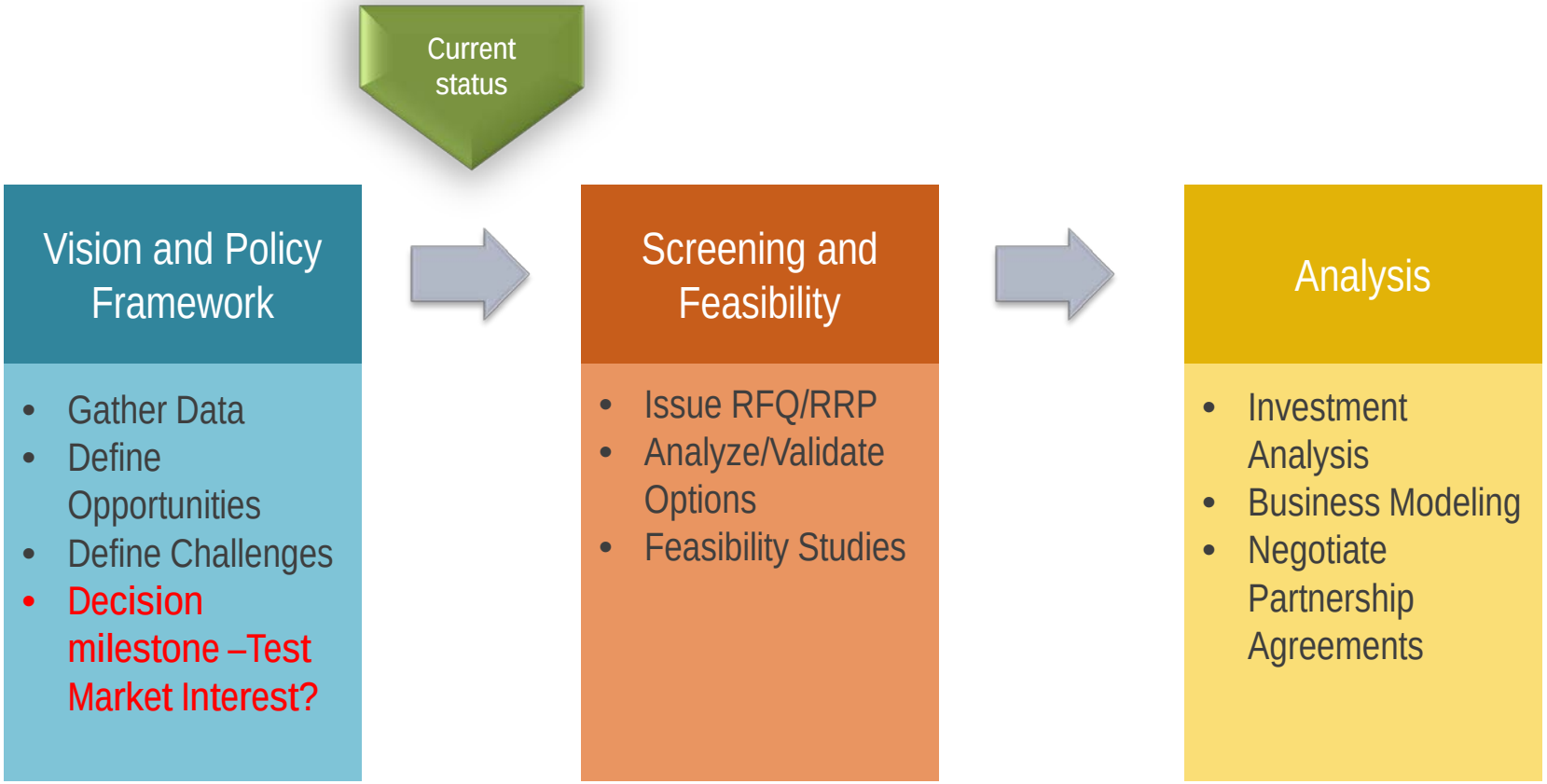
- **Leverage UW's existing district energy infrastructure to attract private investment, share risk, and share revenue in a regional district energy enterprise.**

- **Create opportunities for technology research, innovation, and implementation that supports significant energy resource diversity, improved energy efficiency, with more local/regional renewable energy sources in the future.**

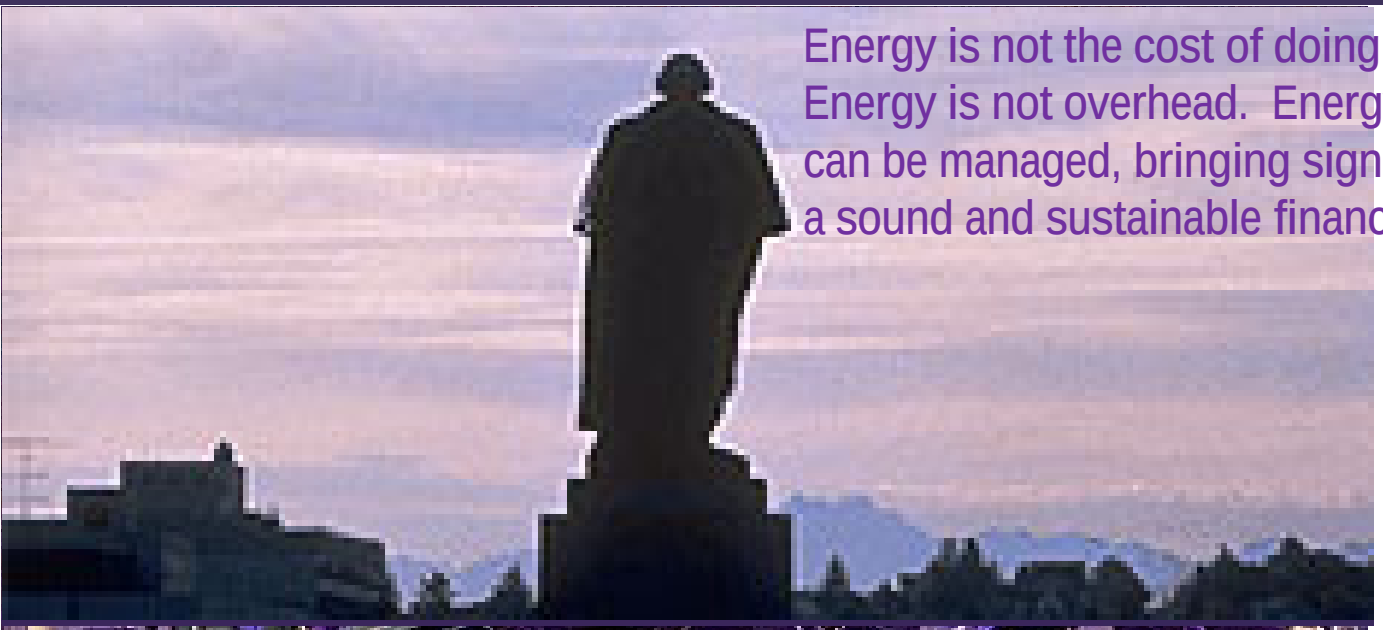
- **Enhance thermal energy, electrical energy, and grey water resource management reliability and resilience for UW's research, academic, and clinical activities; while supporting eco-district development within the city and region.**

- **Reduce UW's carbon footprint anticipating future regulatory risk and supporting UW as a regional and national leader in smart carbon management.**

Decision Milestone – Test Market Interest Now



UW's Energy Future



Energy is not the cost of doing business.
Energy is not overhead. Energy's value and cost can be managed, bringing significant value to enhance a sound and sustainable financial future for the UW.