Campus Physical Planning Committee

February 20, 2014
KL 232

1. Call to Order
2. Approval of Minutes

Discussion Items
3. 2020 Project Update
4. Central Plant/Telecommunications Reliability Upgrade Project Advisory Committee
5. Merced Vernal Pools and Grasslands Reserve Storage Facility Proposal
6. Temporary Storage Facility Site Selection Criteria

Reports
7. Report from the Department of Design and Construction
8. Report from the Department of Physical and Environmental Planning
Campus Chilled Water
2014/2015

Temporary Chillers and
Load Shedding

OUTLINE

• Central Plant - Functions
• Central Plant - Overview
• Central Plant – Critical Limitations
• Chilled Water Demand
• Curtailment Plan
• Additional Cooling
• Costs
• Two chillers Result Summary
• Load Profile Result Summary
Central Plant - Functions

- Chilled water for building cooling
- Heating hot water for building space conditioning and for domestic/industrial hot water
- Process steam for laboratory use
- Manage and distribute incoming electrical from PG&E and solar
- Centralized control room monitoring building cooling, heating, lighting and ventilation

Central Plant - Overview

- Completed: August 2005
- Construction Cost: $27 million
- Size: ~20,100 GSF
- Thermal Energy Storage (1): 2,000,000 gallons
- Chillers (3): 2 @ ~1,100 tons, 1 @ 1,366 tons
- Cooling Towers (5): 1,735 GPM
- Hot Water Boilers (3): 2 @ 14,650 MBTU/h, 1 @ 8,370 MBTU/h
- Steam Boilers (2): 7,000 MBTU/h
- Reverse Osmosis (RO) system
- Pumps: Ranging from 10hp – 100hp on VFD’s
- Electrical switch gear with dual 12.47kV feeders from PG&E
- Diesel Generators (2): 1mW
Central Plant – Critical Limitations: Campus cooling

- Central Plant’s Cooling Capacity is at maximum
- SE2 and SSB come online in 2014 and are additional loads to the 2013 cooling level
- COB2 comes online in 2016
- Equipment designed for cooling 800,000 square feet; current campus is ~1,100,000 square feet and growing to 1,200,000 sq ft
- Extreme outdoor temperatures in the summer months combined with high humidity can disable the Central Plant cooling equipment
- Chillers were selected for condenser water supply temp of 75°F and nighttime operation
  - 103°F Dry Bulb temp
  - 68°F Wet Bulb temp

### Chilled Water Demand 2014

- Housing/Dining: 27%
- SE1: 24%
- SE2: 23%
- Library: 9%
- SSM: 4%
- SSB: 3%
- COB: 5%
- Facilities: 2%
- Central Plant: 3%
Central Plant – Engineered Solution: Additional cooling

- Rent two 440-ton air cooled chillers and one 2MW generator for the Summers of 2014, 2015 and 2016(TBD); located at the Central Plant

- Install points of connection to the campus chilled water loop

- Eliminates the need to initiate campus chilled water load shedding during high wet bulb events
Central Plant – Engineered Solution: Costs

<table>
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<tr>
<th>ITEM</th>
<th>QTY</th>
<th>TIME</th>
<th>COST</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>Chillers, cooling towers, generator - Rental for 4 months (June-Sept.)</td>
<td>4</td>
<td>Month</td>
<td>$50,000</td>
<td>$200,000</td>
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<td>Fuel for Diesel (15-days runtime /24 hrs per day - 3 months)</td>
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<td>Month</td>
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<td>Points of Connection</td>
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<td>Ea</td>
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<td>TOTAL:</td>
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<td>$410,000</td>
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Summer Cooling 2014

Two Temporary 440 Ton Chillers - No Curtailment
## Merced Vernal Pool and Grasslands Reserve

### Three 20 foot containers

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![Image of three 20 foot containers](image1)

![Map of Merced Vernal Pool and Grasslands Reserve](image2)
Merced Vernal Pool and Grasslands Reserve
Site Configuration

Temporary Storage Facility
Site Selection Criteria
Challenge
Demand for storage facilities increasing campuswide

Tables and equipment storage
Audio/Visual Equipment storage
ATV and research equipment storage

Challenge
Temporary or modular storage requests

Existing (Red) or Proposed (Yellow)
Site examples that would **not** trigger CPPC review

Siting that would trigger CPPC review: **Conflict with circulation**
Siting that would trigger CPPC review:
Conflict with open space

Proposal
Staff level review and evaluation process

Request from Proponent
Evaluation by Physical and Environmental Planning
Recommendation by Facilities Mgmt, Design and Construction and Physical and Environmental Planning (5 year limitation)

Request includes
- Purpose
- Size
- Expected duration
- Statement of eventual location of permanent use

Proposed Criteria
- Consistency with LRDP
- Safety
- Circulation Impacts
- Consistency with adjacent or planned structures or right of ways
- Impact on building users

Extensions
- Can be granted for up to 10 years total
- Proponent responsible for removal

Appeals
Processed through Vice Chancellor for Planning and Budget to CPPC
Construction Updates

Student Services Building Complete
3-Story building opened for Spring Classes: January 21, 2014
Pavilion previously opened for Fall Classes: August 29, 2013

- 2nd Floor: Center for Career and Professional Advancement, Ombuds Office and Disability Services moved into space January 16, 2014
- 3rd Floor: Two Academic Support rooms that will be in part used for tutorial services
- 3rd Floor: Tenant improvements being designed for Graduate Division and Undergraduate Education offices
Site Development and Infrastructure
Phase 4: 100% Complete

Little Lake Amphitheater
“Wallace-Dutra Amphitheater Celebrating the Class of 2009’s Vision”

- Project will be complete by end of February 2014
- Events are planned as early as April 2014
Science and Engineering 2
August 2014 Completion

- Building Exterior Work near completion
- Site Work is ongoing
- Lab case work, installation ongoing

Classroom Office Building 2
March 2016 Completion
-Out to bids February 4, 2014
- Open bids March 11, 2014
- Break Ground Mid April 2014
Report from Physical and Environmental Planning
Campus Barn coordination with University Advancement

Vernal Pool Interpretive Center
Coordination with Campus Stakeholders for Resources Legacy Fund Grant Proposal