Two (2) 175 Ton (350 Tons total) Chiller Geothermal Heat Pumps for recently commissioned LEED Platinum Building

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Technical Track

Mandatory Overview Slide

Timeline

- Start date: January 15th, 2010
- End Date: September 30th, 2012
- Percent Complete: 12%

Budget

- Total project funding: $622,648
- DOE share: $311,324
- Awardee share: $311,324
- Funding received in FY09: $0
- Funding for FY10: $124,308

Barriers

- We are looking to address Institutional barrier 3.1.2 – Lack of available and reliable Resource Information

Partners

- N/A

Mandatory Overview Slide

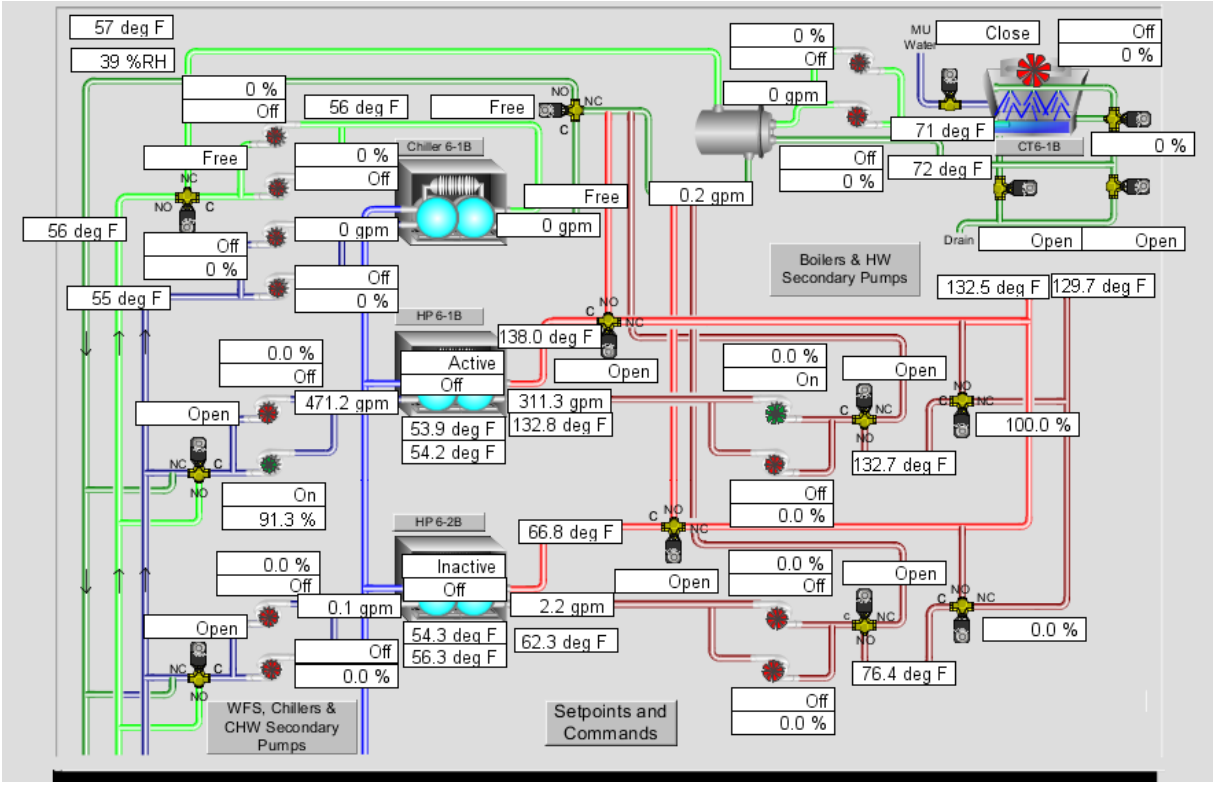
Relevance/Impact of Research

- This project will operate, collect data, and market the energy savings and capital costs of a recently commissioned chiller geothermal heat pump project to promote the wide-spread adoption of this mature technology. Innovative marketing programs will be developed and shared with the DOE, and the site will serve as a chiller geothermal heat pump showcase.

- The project utilizes many energy saving and sustainable technologies including solar and geothermal. The geothermal system is comprised of 272 wells at a depth of 300 feet, a closed loop heat exchanger using 100 percent groundwater, and two (2) 175 ton geothermal chiller heat pumps which are expected to reduce winter heating costs by 29%, summer cooling costs by 23%, and summer heating costs by 57%.

Operation of Chiller Geothermal Heat Pump

Progress: The chiller geothermal heat pumps were in fully operational mode during this reporting period. We have begun documenting the sequence of operation in preparation for sharing this information with the DOE.



Data Collection

Progress: We have begun collecting the necessary trend data on the performance of the geothermal chillers. This data will be shared with the DOE during the next reporting period.

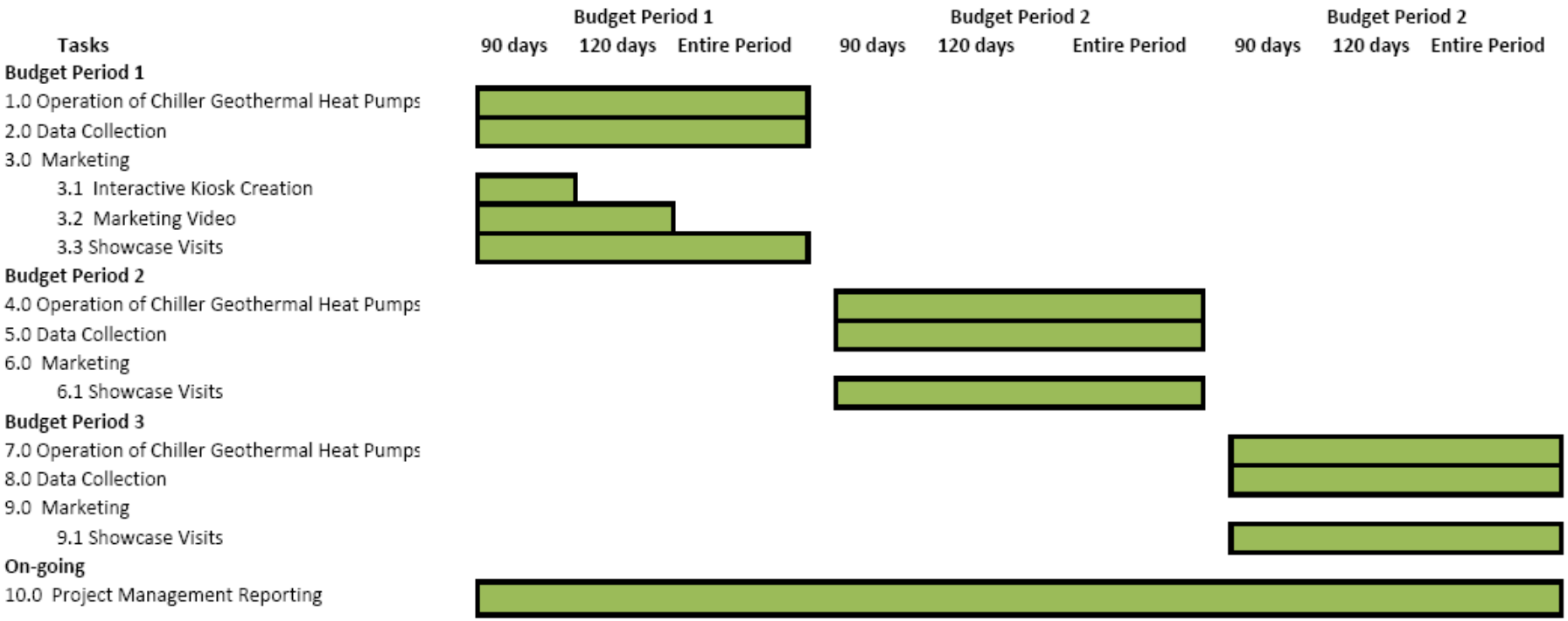
Marketing

Progress: We have created the necessary departmental accounting codes to properly track grant expenditures. We have moved to the team a Systems Technician to program the automatic data collection, and we a project manager in place as of May 10th, 2010. Visitor data kiosk initialized and operational.

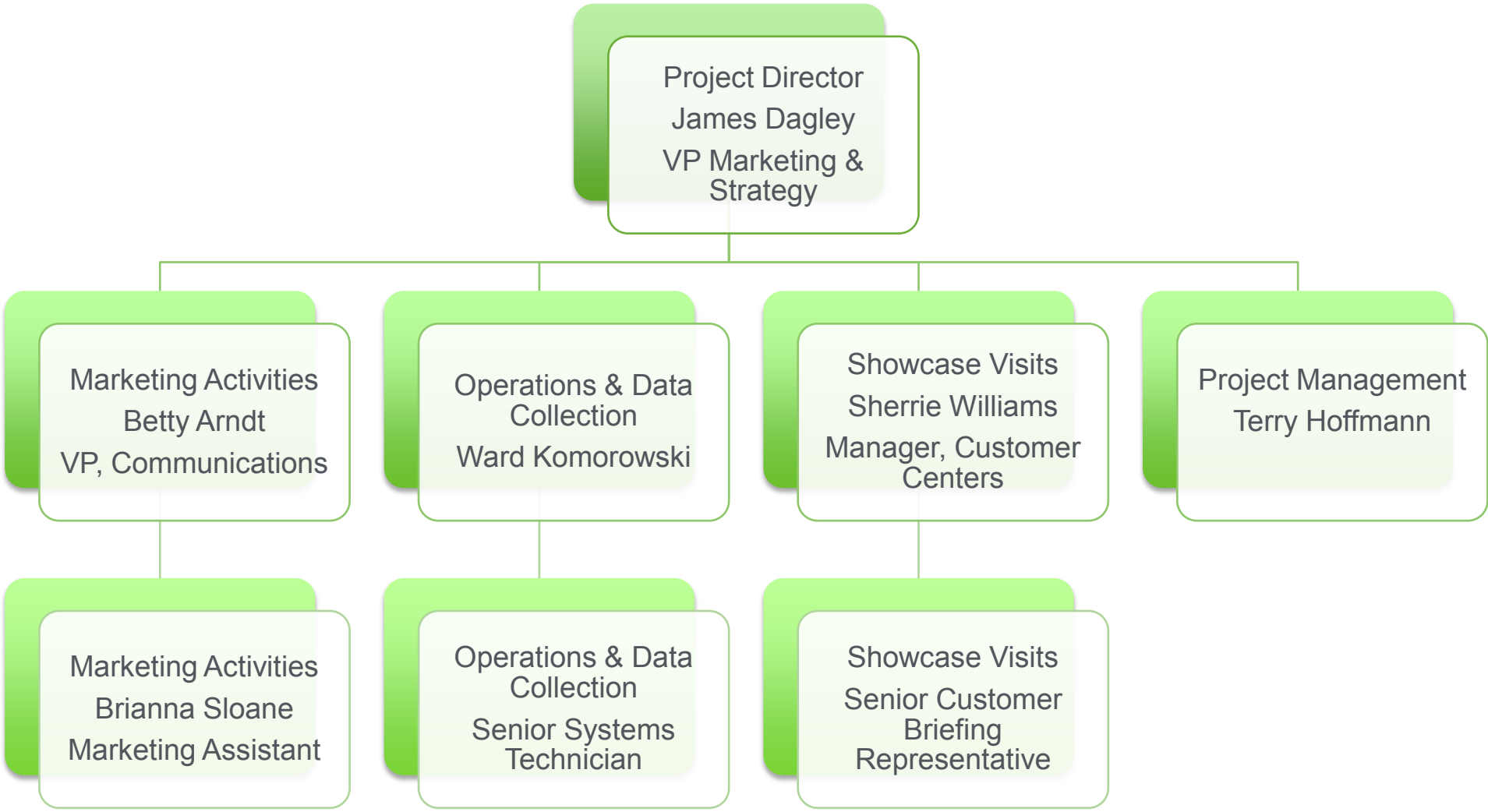
Project Management/Coordination

Project Management Plan

Johnson Controls, Inc.



Project Management/Coordination



Future Directions

- **Operation:** The operation of the entire heat pump system is fully automated. The details of its optimized sequence of operation in all weather and building load conditions will be documented and shared.

- **Data Collection:** The existing building automation system will be programmed to automatically collect all necessary data points to properly document energy consumption.

- **Marketing:** Real-time energy savings will be calculated via the building automation system, and presented to the public via an interactive “kiosk” at the site. The kiosk will also be accessible to the pubic via the internet. A video will be created documenting the construction process, the capital costs of the project, and the energy savings of the chiller geothermal heat pumps. To maximize exposure, the video will be made available to the public via various websites available to Johnson Controls and the DOE. The mechanical room housing the heat pumps was constructed with large windows to enhance public tours and serve as a showcase. As daily public tours are anticipated, a full-time customer briefing representative will be hired to conduct tours and promote the technology.

Mandatory Summary Slide

- Chiller geothermal heatpumps are installed, commissioned and fully operational.
- Collection of trend data for performance verification of geothermal chillers has begun.
- Informational kiosk is in place & operational.
- Informational tours have begun. 35 tours consisting of more than 500 people have toured the facility in the first 3 months of this project.