

Demonstration – Ibis Networks and Dynamic Water

2017 Building Technologies Office Peer Review



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

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Project Summary

Timeline:

Start date: 10/1/2016

Planned end date: 3/31/2018

Key Milestones

1. Site selection, project plan and installation
2. Measurement and verification
3. Document performance

Budget:

Total Project \$ to Date: \$330,630

- DOE: \$185,000
- Cost Share: \$145,630 (GSA)

Total Project \$: \$380,630

- DOE: \$50,000
- Cost Share: \$0 new funding (FY17 funding to carryover to FY18)

Key Partners:

GSA	PetSmart
Dynamic Water Technologies	Costco
Ibis Networks	Luxottica

Project Outcome:

Test, validate, and document the performance of promising energy and water saving technologies. Facilitate and catalyze the adoption of the successful technologies through technical reports, case studies, and guidance documents.

Ibis Networks

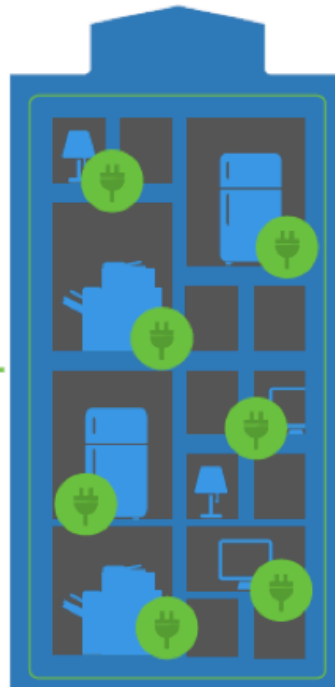
GET INSIGHT

Install Ibis IntelliSockets in minutes into the outlets you want to monitor, then tag them with location and device type



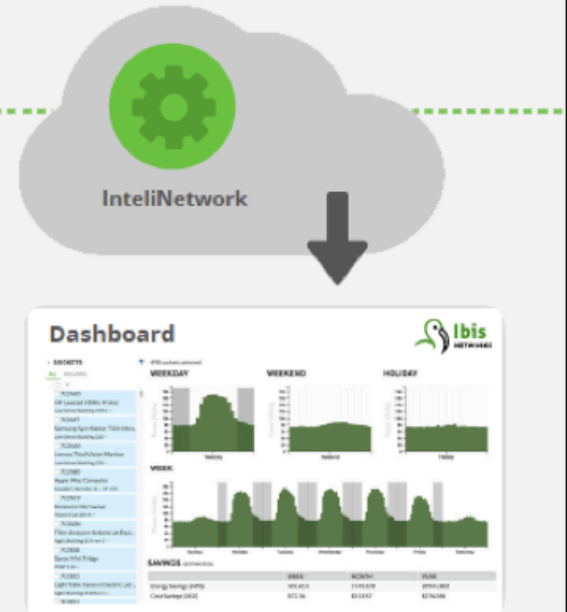
ANALYZE

See how hundreds of devices, appliances, and office equipment throughout your building consume electricity – even when no one is using them



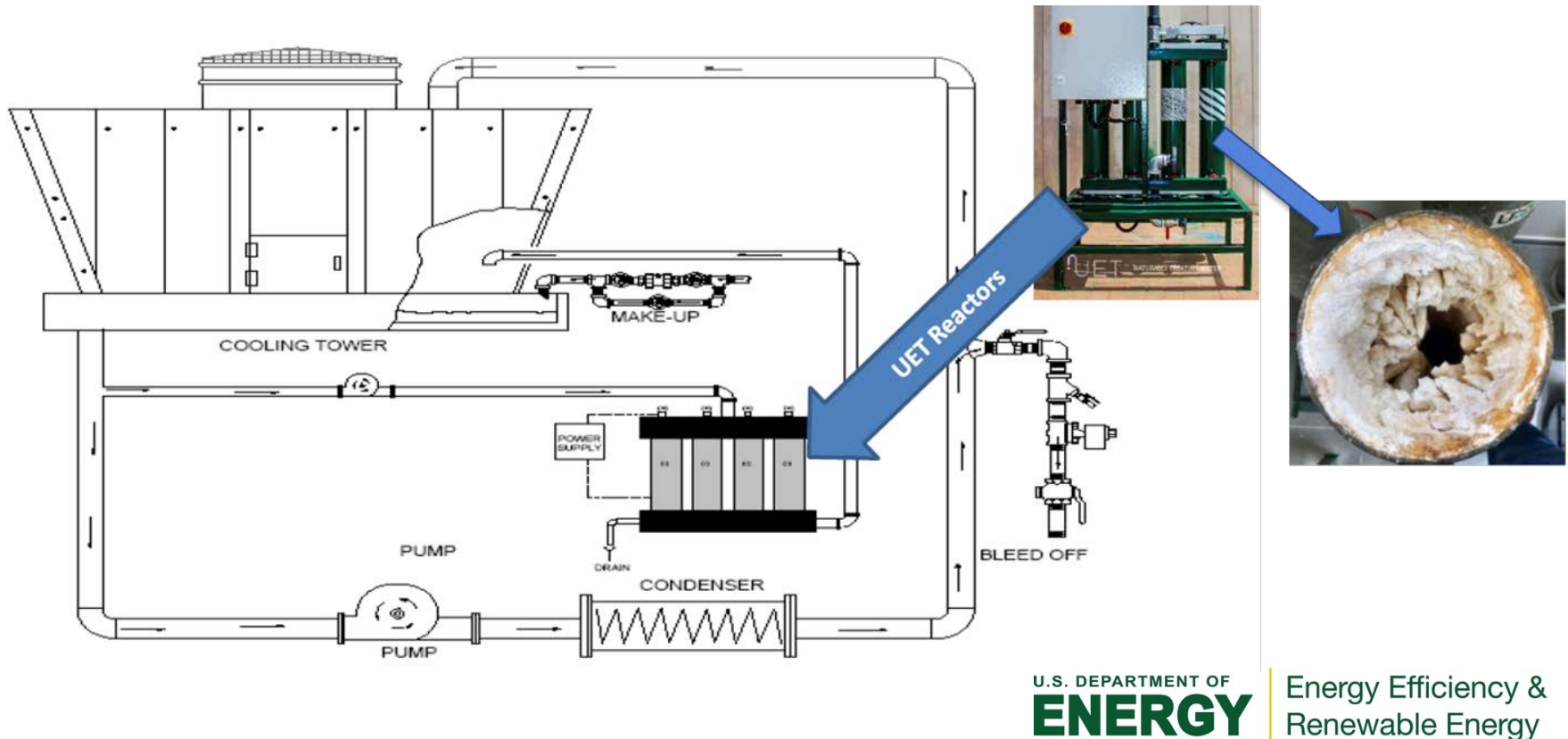
ACT

Use the data to make decisions about managing the energy in your buildings. Turn devices off, schedule power-downs, and respond to alerts



DWT-UET Chemical Free Water Treatment

- Electro-catalytic process accelerates scale formation in the reactors
- Maintains a balance of pH and minerals to minimize corrosion
- Forms HOCL and CL_2 from the chlorides in the water, which are effective biocides
- Blowdown water (and sewer) savings of 25-80% (increase CoC to 30 or more)
- Energy savings from cleaner heat transfer surfaces



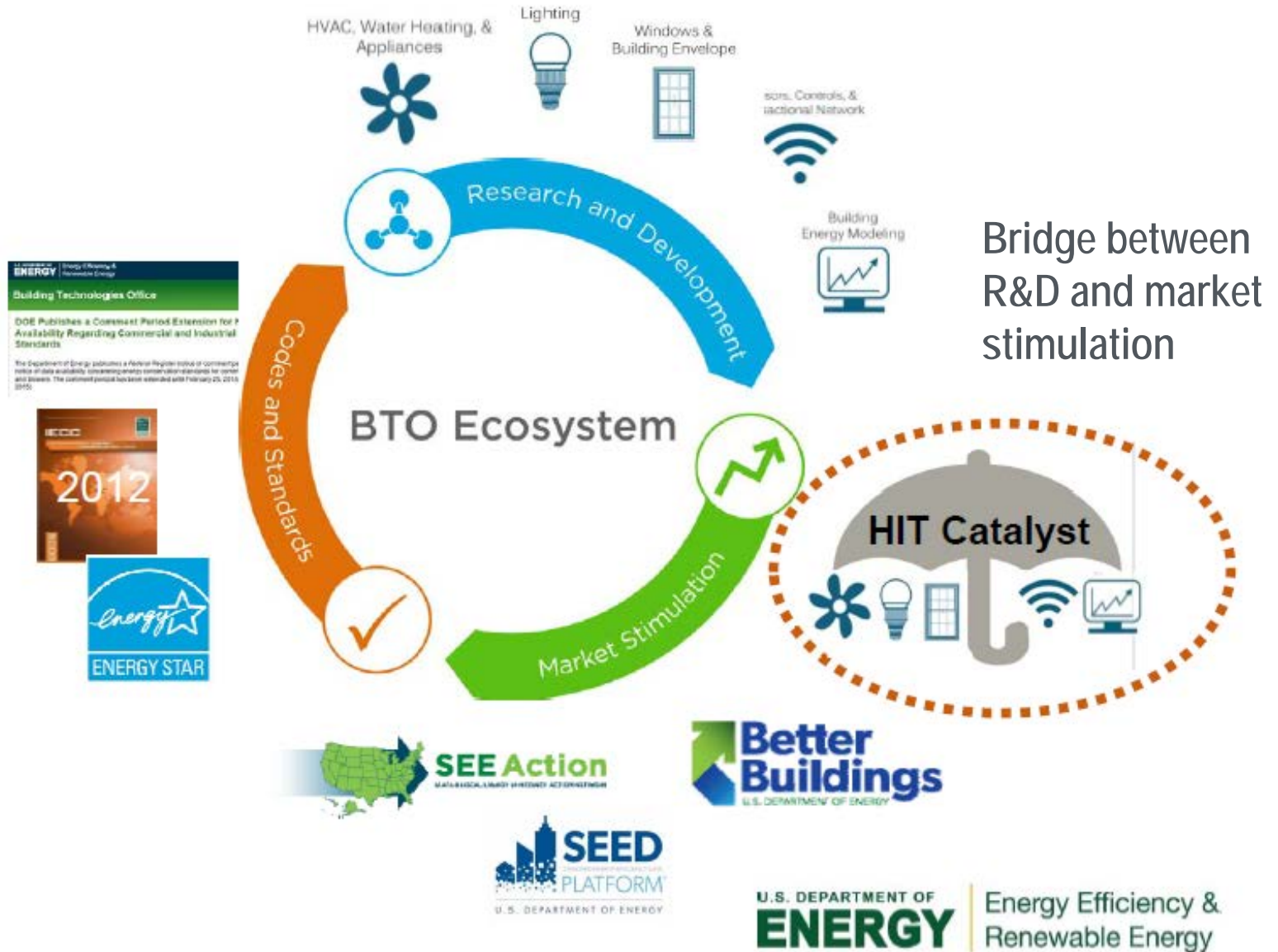
Purpose and Objectives

General Problem Statement:

- Lack of credible performance information on new technologies inhibits market uptake and realization of savings from new technologies
- Significant uncertainty and risk in adopting new technologies

	<u>Dynamic Water Technologies</u>	<u>Ibis Networks</u>
Problem Statement	Cooling tower management can be challenging and they consume large quantities of water and chemicals	Plug loads consume over 30% of commercial building energy. They are often not tracked or managed, leaving untapped energy savings
Target Market and Audience	Large building owners and facility managers with large process water loads Examples include: office buildings, large hotels, hospitals, and campuses	Medium – large commercial building owners and facility managers Examples include: offices, retail, hospitals, education

Technology Demonstrations Bridge from ET to Market



Purpose and Objectives

Impact of Project:

- Technical reports documenting performance
- Market outreach summary documents
- Implementation guides
- Promotion of results and resources through Better Buildings and GSA Green Proving Grounds
 - Technology Teams
 - Building owner sector calls
 - Better Buildings Solutions Center



Alliance Home Sectors Partners Solutions Resources Newsroom Get Involved Join

[Better Buildings Initiative](#) » [Better Buildings Alliance](#) » High Impact Technologies

High Impact Technologies

High impact technologies (HITs) are cost-effective, underutilized energy-efficient building technologies. Through the [High Impact Technology Catalyst program](#), the U.S. Department of Energy (DOE) identifies HITs and guides them through their early market introduction phases, ultimately deploying them to the broader market through partnerships with the commercial buildings industry.

The [current HIT List](#) is based on the evaluation of almost 500 building technologies. DOE initiate market transformation activities for these technologies with support from federal leaders, regional non-profits, utilities and efficiency organizations through the Better Buildings Alliance.

Looking to demo high impact technologies in your building?

The [High Impact Technology HQ](#) is a one stop shop for information associated with technology demonstrations in occupied, operational buildings. Many technology demonstration templates, resources and final results are dispersed across programs and partners. The HQ brings these resources together and will be updated frequently, as new opportunities, resources and outcomes become available.

- [Participate: Current Opportunities for Owners and Operators](#)
- [HIT Results](#)



Green Proving Ground



Six Technologies Selected from Last Year's RFI

GPG has selected for evaluation six innovative technologies that show great potential to meet GSA's sustainability goals while at the same time providing economic value.

[Learn more: Ongoing Assessments >](#)



Request for Information

GPG and DOE's High Impact Technology (HIT) Catalyst have issued a joint RFI calling for innovative emerging building technologies that can cost-effectively transform the operational efficiency of federal and commercial buildings.
The RFI is now closed.

Published Findings

GPG has recently completed assessments of the following technologies:

[Linear LED Retrofits](#)
[Smart Ceiling Fans White Paper](#)
[Control Optimization System for Chiller Plants](#)
[Honeycomb Solar Thermal Collector](#)
[LED Downlight Lamps for CFL Fixtures](#)

Ongoing Assessments

GPG is assessing technologies in the following areas:

[Building Envelope](#)
[Energy Management](#)
[HVAC](#)
[Lighting](#)
[On-site Power & Renewables](#)
[Water](#)

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Approach

Approach:

- Screen demonstration sites based on site selection criteria
- Develop a project M&V plan with all parties
- Install technology and instrumentation
- Collect baseline and technology on data and analyze performance
- Report findings and recommendations based on performance and market factors

Key Issues:

- Selecting the best demonstration sites
- Defining an M&V plan that balances the need for accuracy with the cost and extent of the monitoring
- Establishing a well defined and defensible baseline

Distinctive Characteristics:

- Partnerships across technical, management, and market sectors
- Carefully designed demonstration and analysis plans

Progress and Accomplishments

Accomplishments:

- DWT:
 - Identified demonstration site and completed experimental design and demonstration plan
 - Scheduled installation of technology and planned start in May
- Ibis Networks:
 - Identified demonstration sites with 3 partners
 - Installation complete at one site, installation of technology in other 2 sites completed by May

Market Impact:

- Interest in results from Better Buildings and GSA
- Results will be disseminated through Better Buildings and GSA channels

Awards/Recognition: None yet

Lessons Learned:

- Difficult to plan demonstration projects around activities of real buildings

Project Integration and Collaboration

Project Integration:

- DOE, GSA, and lab staff coordinate technology reviews, site selection, M&V plans, and dissemination of results

Partners, Subcontractors, and Collaborators:

- Part of the DOE HIT and GSA GPG programs
- Dynamic Water Technologies
- Ibis Networks
- PetSmart, Costco, Luxottica – Pilot partners
- Mountain Energy Partnerships – Instrumentation subcontractor

Communications:

- Projects are announced through Better Buildings Initiative communication channels
- Results will be promoted through Better Buildings and Green Proving Grounds with technical report, case studies, and webinars

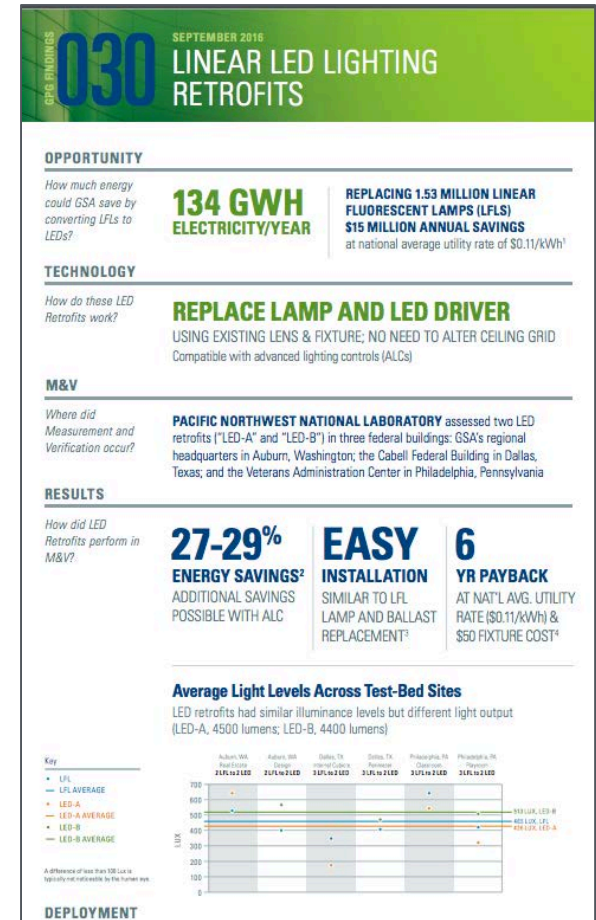
Project Integration and Collaboration



HIGH IMPACT TECHNOLOGY CATALYST



Mountain Energy Partnerships



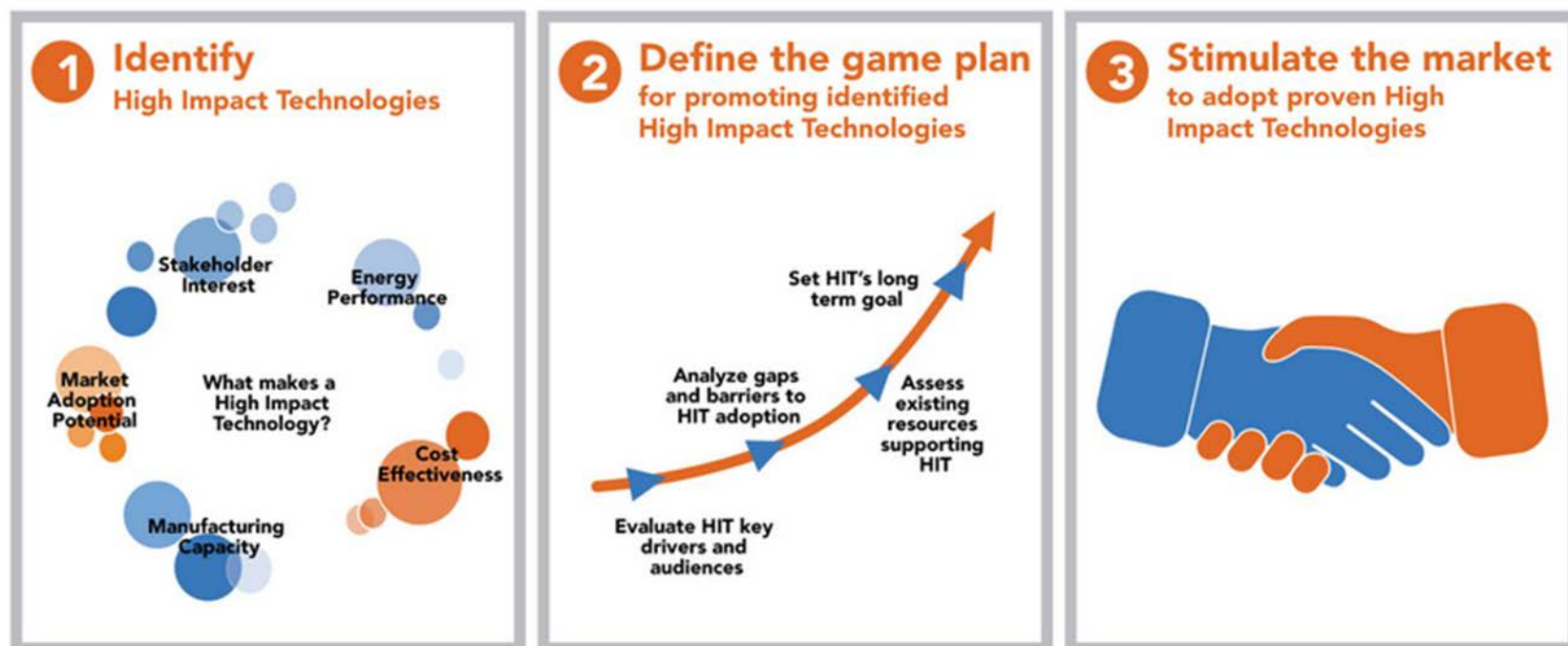
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Next Steps and Future Plans

Next Steps and Future Plans:

- Complete demonstrations, analysis and reporting
- Share results through Better Buildings Initiative and GSA GPG
- Develop implementation guidance for adoption of new technologies
- Share results with DOE Technology to Utilities effort, which is working to streamline adoption of emerging technologies



REFERENCE SLIDES

Project Budget

Project Budget: This project started in FY17 with funding from DOE for a DWT and Ibis demonstrations. The GSA GPG demonstration of DWT is funded by GSA.

Variances: None

Cost to Date: DOE \$15,000, GSA \$22,400 (through mid Jan)

Additional Funding: GSA GPG funding for GSA demonstration of DWT

Budget History

FY 2016 (past)		FY 2017 (current)		FY 2018 (planned)	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
\$0	\$0	\$185,000	\$143,600	\$50,000	FY17 carryover

Project Plan and Schedule

Project Schedule								
Project Start: 10/1/2016		Completed Work						
Projected End: 6/30/2018		Active Task (in progress work)						
	◆	Milestone/Deliverable (Originally)						
	◆	Milestone/Deliverable (Actual)						
	FY2017				FY2018			
Task	Q1 (Oct-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)	Q1 (Oct-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)
Past Work								
Q1 Milestone: Site Selection		◆						
Q2 Milestone: Demonstration Plan			◆					
Q4 Milestone: Ibis report					◆			
Q1 Milestone: DWT draft report						◆		
Q3 Milestone: DWT Final report							◆	