OpenEfficiency Initiative

2017 Building Technologies Office Peer Review

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

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Performance Systems Development

Project Summary

Timeline:

Start date: 8/1/2015

Planned end date: 6/30/2018

Key Milestones

1. Initial platform configuration and distribution to program administrators; Months 9-10
2. Project initiation and program activity reporting; Months 12-14
3. Evaluation and documentation of OEI program activity results; Month 24

Budget:

Total Project $ to Date:

- DOE: $227,355 (all past and current FY)
- Cost Share: $239,270 (all past and current FY DOE dollars)

Total Project $:

- DOE: $999,999 (all past, current, and planned future FY)
- Cost Share: $1,020,731 (all past, current, and planned future FY)

Key Partners:

Cadmus	LA County (SoCalREN
NREL	The Energy Coalition
PECO	VEIC
PGW	Xcel Energy
SKEE	

Project Outcome:

- Overcoming market barriers to cost-effective commercial energy savings opportunities
- Increased range and depth of energy savings from whole building commercial EE programs via reduced program administrative costs and improved alignment of program operations with private-sector market experience
- Commitment from Program Administrator partners to impact over 300 buildings in multiple states

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OpenEfficiency Objectives

- **Objective 1:** Design an open source platform to support commercial EE programs by integrating an expanding range of Department of Energy (DOE) developed tools.

- **Objective 2:** Address barriers which Program Administrators (PAs) experience as they reach energy savings opportunity plateaus through traditional program design.

- **Objective 3:** Reduce owner costs to program participation through data and process standardization and alignment of EE programs with private sector energy services and finance.

- **Objective 4:** Integrate savings prediction and automated measurement of savings for cost effective Measurement & Verification of real energy savings.

- **Initial Outcomes:** Impact over 300 buildings and reach customers in multiple states. Expect over 500-1000 buildings in 2017.

Approach

Approach: PSD is working with project pilot partners to define and support programs that demonstrate use of the platform. PSD is working with Cadmus on the development of a guide for program design and evaluation that will help new users design programs that get deeper value out of the platform. PSD is also developing research papers and webinar content to support potential partners in the adoption of federal tools using the platform.

Key Issues: Utility company security and hosting of the platform is an issue. Platform adoption is faster by other partner types. Currently working on solutions for hosting to address this concern.

Distinctive Characteristics: System integration is providing process streamlining. The range of projects is broader and deeper than originally thought. Other local stakeholders are expressing interest in adopting the platform.

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Problems with the Current Connection Model
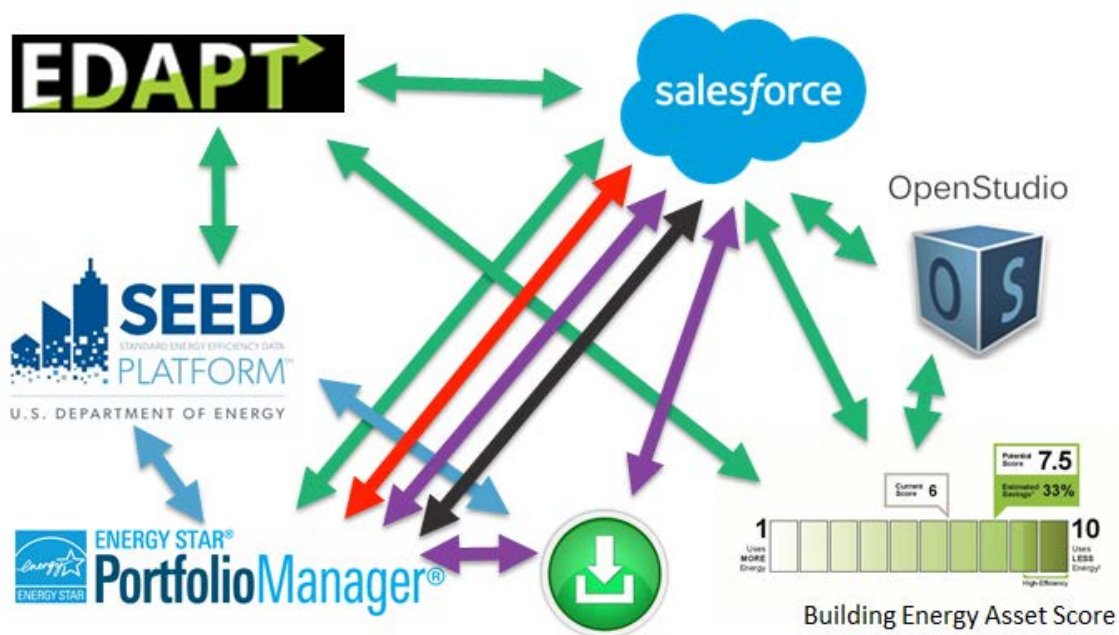
Redundant

Incomplete
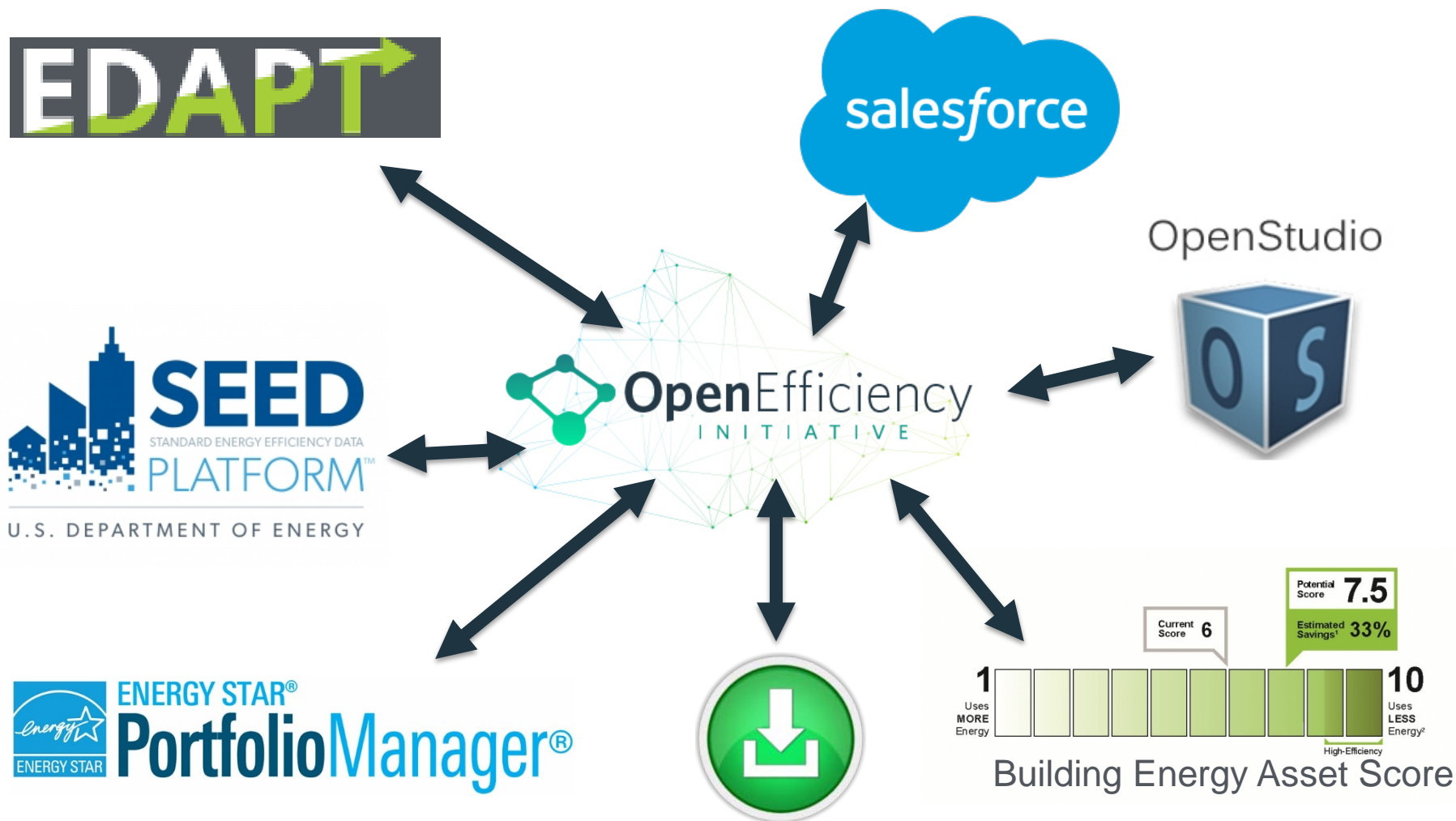
Fragile

Rigid

Insecure

Expensive

OpenEfficiency Extensible Hub and Spoke Model

BEDES Data Taxonomy and BuildingSync Data Transfer

	CRM	Data Standardization	Service Provider Portal	Modeling	Optimized Modeling	Data Aggregation	Benchmarking	Transparent M&V Engine
	SalesForce	BuildingSync	EDAPT	OpenStudio	Asset Score	SEED	ESPM	R Package
Energy Design Assistance (Commercial New Construction)	✓	✓+	✓	✓	✓+		✓+	
Whole Building Custom Measure (Modeled Savings)	✓	✓+	✓	✓			✓+	
Retrocommissioning	✓	✓	✓					
Light Touch Audits and Building Data Aggregation	✓	✓			✓	✓	✓	
Automated Benchmarking	✓	✓				✓	✓	
Automated Performance Measurement	✓	✓				✓		✓

Key Impacts on Whole Building Programs

Impact the Market

- Increase pool of potential modelers through standardization

- Meet goals with deeper savings from integrated approaches

- Gain flexibility to align programs with building owner non energy interests

- Reduce cream skimming and repeated treatments of buildings

- Reduce the effort to adopt new program designs

Reduce Risk

- Reduce acquisition costs by reducing admin costs and streamlining data flow

- Help manage attribution documentation

- Improve realization rates

- Expand participation through market based approaches

- Integrate with utility tracking and customer engagement systems

OpenEfficiency
INITIATIVE

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# Progress and Accomplishments

Accomplishments: Five co-funded demonstration projects have been launched.

- Building benchmarking mandate support and integration with efficiency planning and program delivery (Los Angeles County using SEED, Asset Score and Portfolio Manager)
- Whole building retrofit process streamlining (The Energy Coalition using Portfolio Manager, Asset Score, Salesforce, Green Button Connect and OpenStudio)
- Commercial new construction program process streamlining (Xcel Energy using OpenStudio, Salesforce and EDAPT)
- Public-Private ESCO process streamlining (VEIC using Asset Score, OpenStudio and Portfolio Manager)
- Streamlining of calculations and data processing for complex efficiency improvements (VEIC using OpenStudio and Salesforce)

Market Impact: The number of pilot projects have been expanded based on access to expanded cofunding from partners.   Some projects are more comprehensive than in the initial plan.

Awards/Recognition: Esource Commercial Building Most Innovative Initiative 2015

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Fitting the Tool Set into a Whole Building Upgrade Process

Image: Nora Wang PNNL
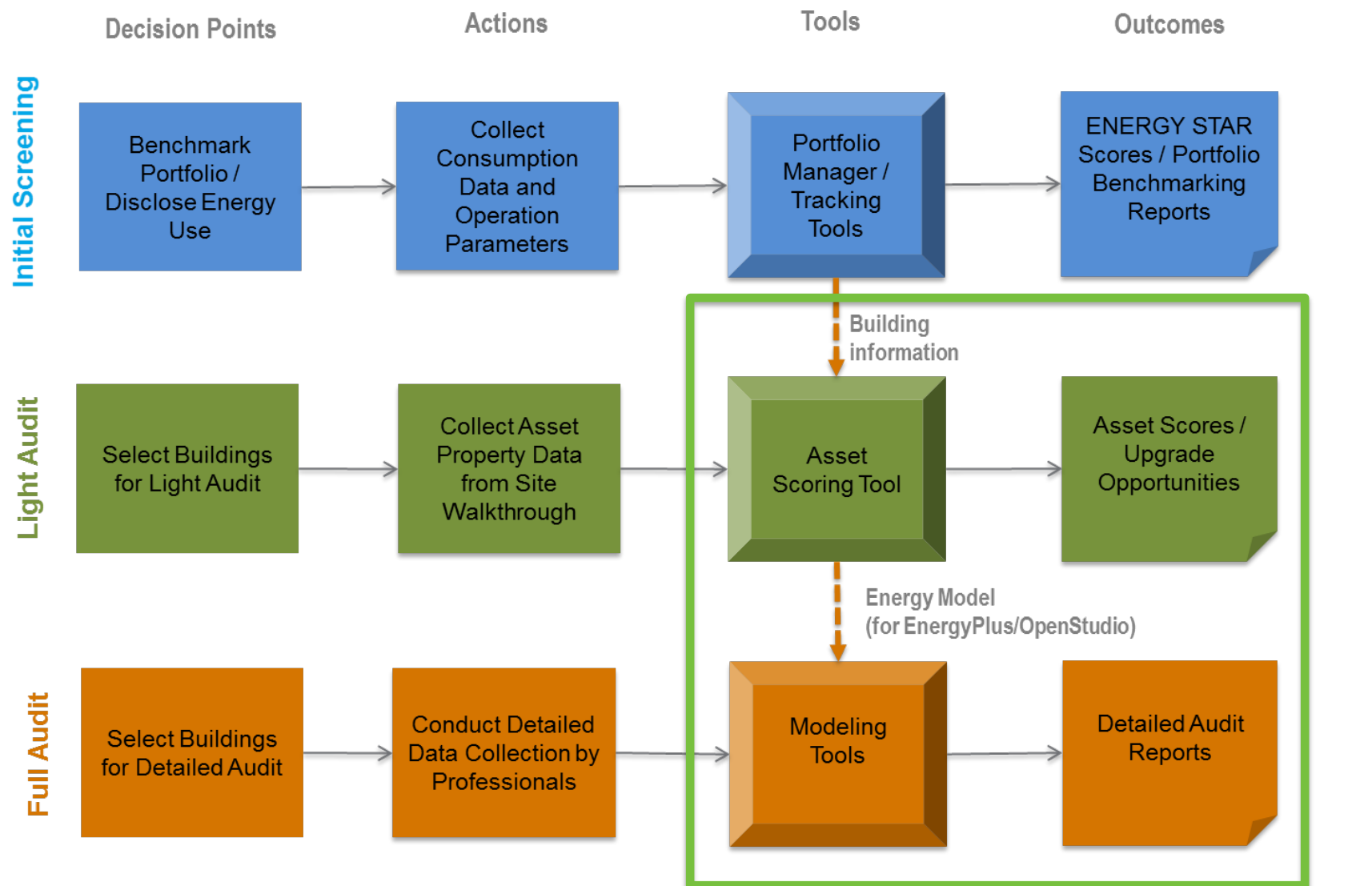
Project Integration and Collaboration

Project Integration: PSD works directly with pilot partners and subcontractors to define project scopes. The broader platform is emerging from these projects. Frequent feedback is provided to DOE tools developers: Primarily PNNL on Asset Score and NREL on OpenStudio and SEED.
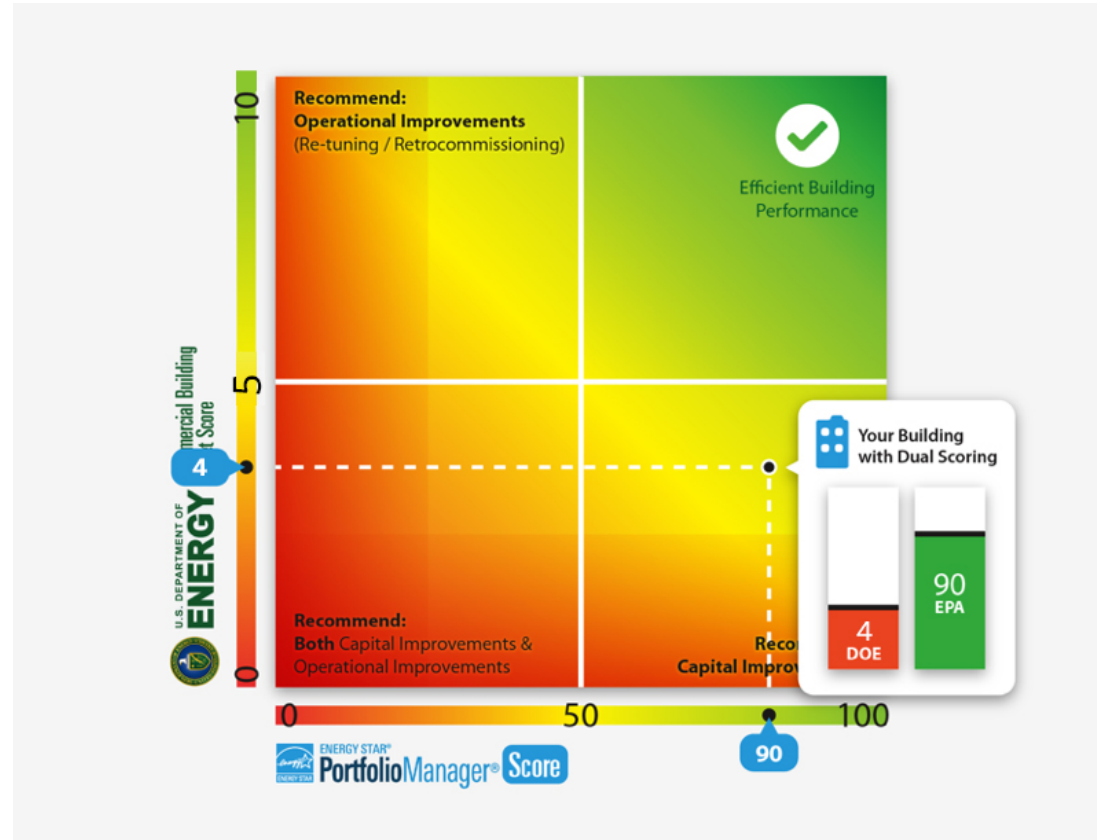
Partners, Subcontractors, and Collaborators: Partners include Xcel Energy, Los Angeles County, The Energy Coalition, Vermont Energy Investment Corp. Subcontractors include NREL, Cadmus and SKEE (M&V consultant). Additional support has come from PNNL (Asset Score and the Asset Score Reporting Platform) and LBNL (BEDES Mapping support).

Communications: AESP National, ESource Forum, DOE Better Building Conference. Some research has been presented as part of Asset Score advanced training webinars. Multiple presentations to partners and potential partners.

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Next Steps and Future Plans:

- Expand documentation on the use of tools in programs based on experience and research in the demonstration projects
- Integrate the hub into systems outside of the initial projects
- Evaluate and document the performance of the demonstration projects
- Build up platform distribution model

REFERENCE SLIDES

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Project Plan and Schedule

Project Schedule														
Project Start: 8/1/2015				Completed Work										
Projected End: 6/30/2017				Active Task (in progress work)										
				Milestone/Deliverable (Originally Planned) use for mis										
				Milestone/Deliverable (Actual) use when met on time										
			FY2016				FY2017				FY2018			
Task			Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Oct-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)	Q1 (Oct-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)
Past Work														
Q4 Milestone 1.1 - Kick-off meeting				◆		◆							
Q3 Milestone 1.2 - Draft design plan (OEP config)						◆	◆						
Q3 Milestone 1.3 - Draft design plan (pilots)							◆						
Q4 Milestone 1.4 - Final design plan (OEP config)						◆		◆					
Q4 Milestone 1.5 - OEP configured for pilots launch							◆						
Current/Future Work														

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Task	FY2016				FY2017				FY2018			
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Current/Future Work												
Q Milestone 2.1 - Launch training						⬛ ◆						
Q Milestone 2.2 - First projects started					⬛	◆						
Q Milestone 2.3 - Prelim PA activity reports							◆					
Q Milestone 2.4 - Configuration adjustments								◆				
Q Milestone 2.5 - Annual PA activity reports								◆				
Q Milestone 3.1 - Program evaluation reports/review										◆		
Q Milestone 4.1 - Paper and presentation of results												◆

Project Budget

Project Budget:

- Total Project $: DOE: $999,999   Cost Share: $1,020,731

Variances: Less expended in BP1 than anticipated.
Cost to Date: $227,355 direct plus $239,270 cofunding
Additional Funding: Additional funding of $154,000 to date from LA County (SoCalREN) .

Budget History					
Aug 2015 – FY 2016 (past)		FY 2017 (current)		FY 2018 – June 2018 (planned)	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
$139,800	$19,986	$ 425,011	$556,097	$386,322	$390,730