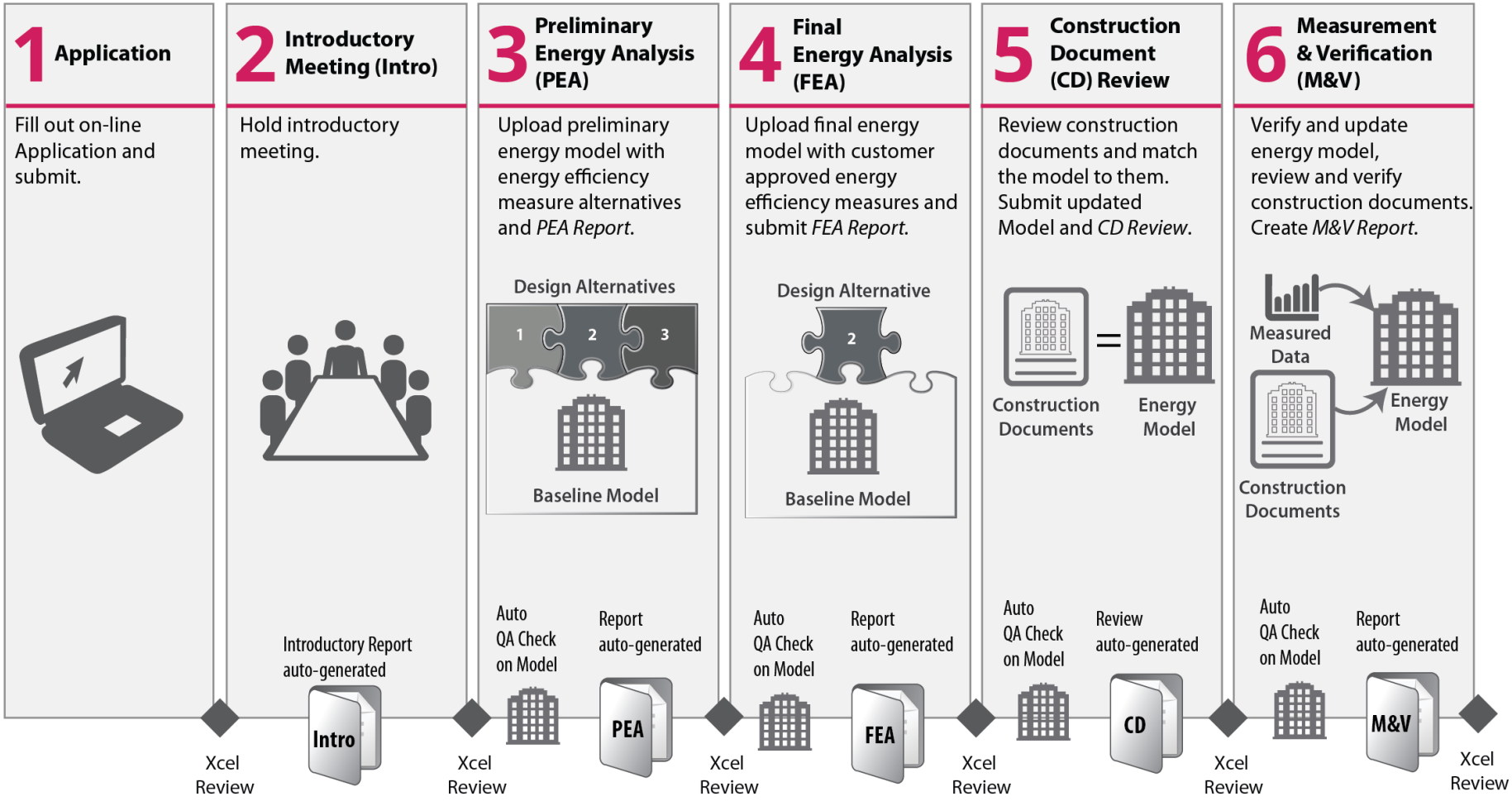
Energy Design Assistance Project Tracker (EDAPT)

New Project

2014 Building Technologies Office Peer Review



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Project Summary

Timeline:

Start date: **Q1 FY14**

Planned end date: **Q1 FY15**

Key Milestones:

1. Stage Gate – 11/22/2013
2. Multi-Utility Extension – 2/21/2014
3. AEDG Measures – 3/28/2014
4. Retrofit Extension – 7/25/2014

Budget:

Total DOE $ to date: $**711,000**

Cost Share $ to date: **$611,000**

Proposed future DOE $: **TBD**

Target Market/Audience:

Utilities, Utility Consultants, Tool Developers

Key Partners:

Xcel Energy	concept3D Inc.
National Grid	PSD Consulting
Austin Energy	
Com-Ed	
Duke Energy	Other Utilities TBD

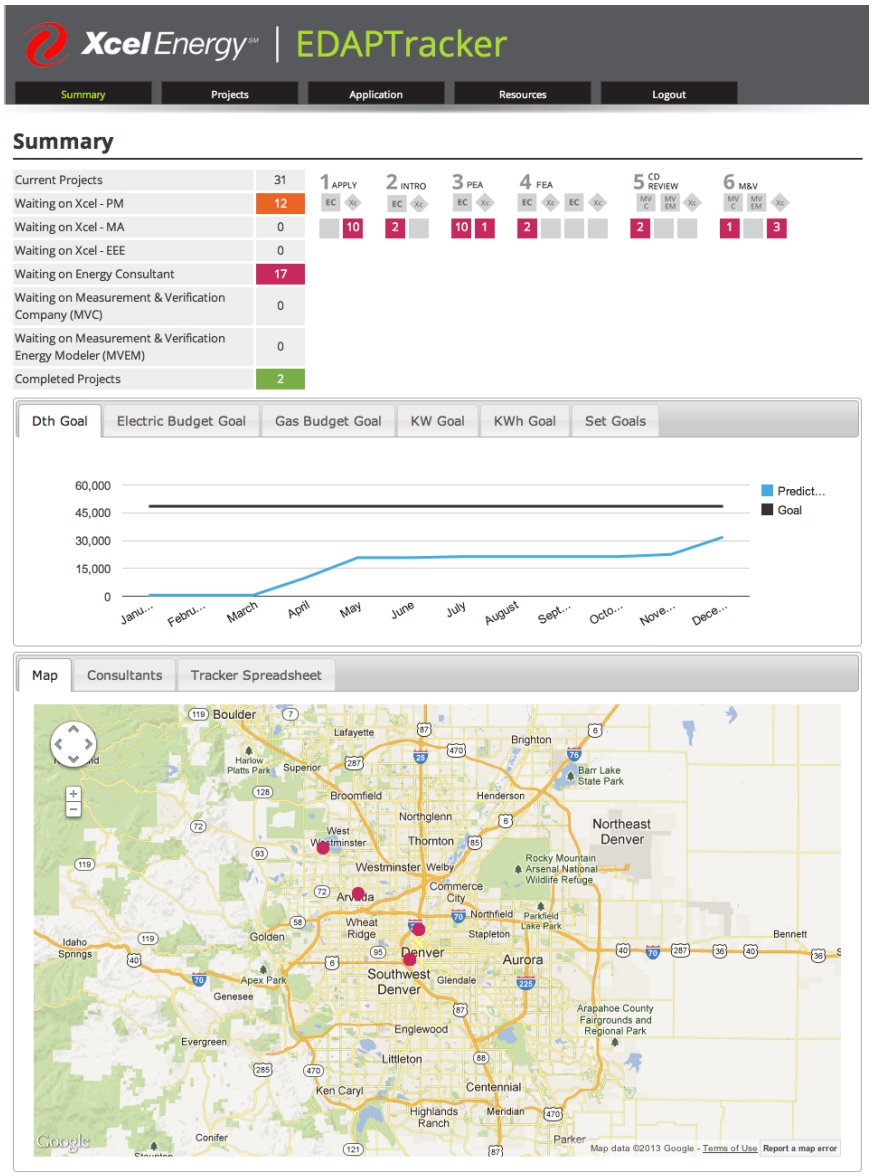
Project Goal:

Extend Xcel Energy's EDAPT web service for use by multiple utilities to reduce administrative costs of new construction and retrofit incentive programs.

Deliver in-kind remuneration related to packaged OpenStudio AEDG measures, retrofit tracking, and cost data aggregation that makes Xcel Energy ratepayers whole so that EDAPT may be made freely available.

Facilitate successful deployment of platform to additional utilities and develop an off-ramp strategy.

Incenting New Construction Efficiency



Energy Design Assistance (EDA)

- These programs are a primary tool to influence efficiency beyond code for new construction
- Over 40* such programs offer tens of millions in incentive dollars each year across the country

Problems:

- EDA viability jeopardized as codes become more stringent
- Must reduce admin costs to remain viable
- Must maintain quality

Solution:

- Web service tracks projects, manages data & communications, and reports program-wide outcomes
- OpenStudio provides automated quality and EDA protocol checking
- EDAPT connects project data with model outcomes to streamline reporting

* As reported by Esource on 4/1/2014

Target Market and Audience

Socialization of the concept with other utilities in 2012 and 2013 suggested market appetite for:

- Broader adoption of EDAPT in other utility EDA programs
- Extension of the web service to also manage retrofit incentive programs.

In 2013, DOE considered the possibility of providing in-kind compensation to Xcel Energy ratepayers so that the service could be freely offered to other utilities

In-kind remuneration efforts agreed upon included:

1. Packaging of 50% K-12 and Office AEDG guidance as OpenStudio measures in the Building Component Library (BCL) to further reduce modeling costs,
2. Extension of EDAPT to support Xcel Energy retrofit incentive programs, and
3. Development of new EDAPT/BCL functionality to generate measure cost distributions and make those available in the BCL.

Tasks 1 and 3 are of general value to any practitioner using OpenStudio tools, whereas task 2 is aligned with broad utility interests.

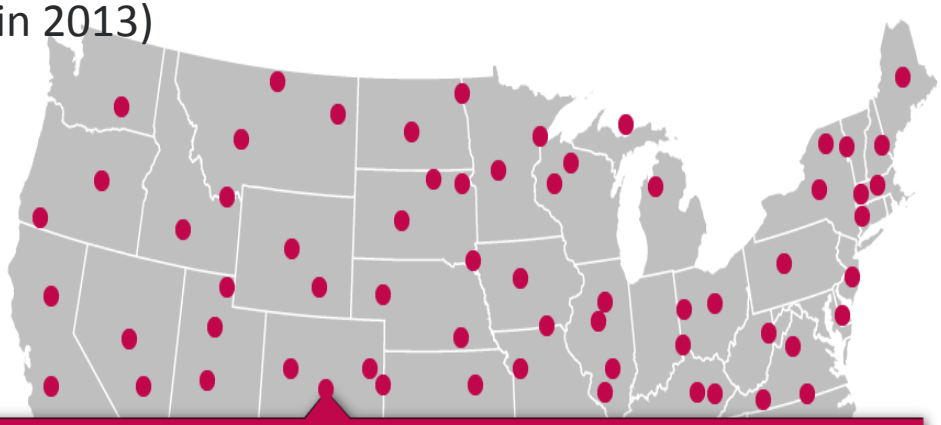
Real Design Projects = Real Impacts

For Xcel Energy's new construction program EDAPT is directly contributing to:

- Administrative savings of $500,000 per year
- Xcel's 2014 program savings goal of 40 GWH (up from 30 in 2013)
- 90 new projects in the pipeline (up from 70 in 2013)
- 8 energy consultants (up from 2 in 2013)

Xcel Energy anticipates modeling time and cost reductions of at least 50% when using the new AEDG measures

NREL is currently working with a number of utilities including Austin Energy, Com-Ed, Duke Energy, National Grid, and others to facilitate adoption of EDAPT beginning in FY15 that will support additional EDA as well as retrofit programs



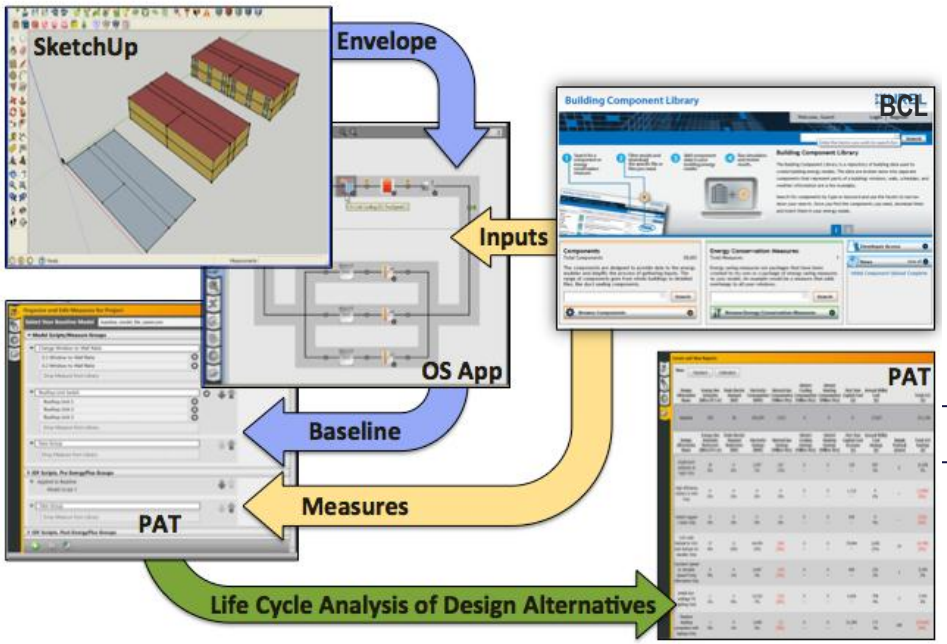
Xcel Energy: Colorado Current Current Projects XXX

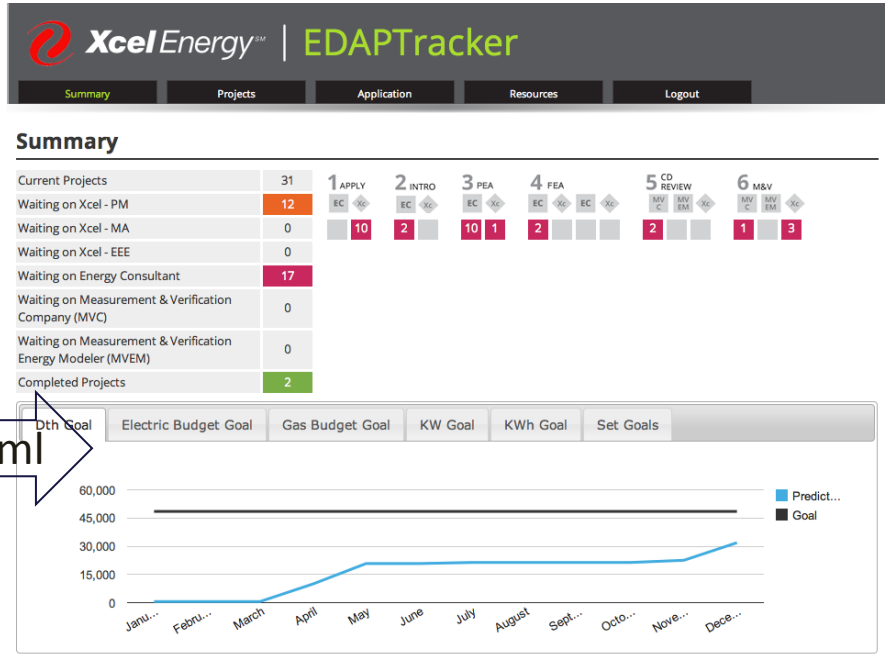
Participating since 2013

	# of New Constructions	# of Retrofits	Predicted Electric Savings (GW)	Predicted Gas Savings (Dth)
Office	XX	XX	XX	XX
Retail	XX	XX	XX	XX
Strip Mall	XX	XX	XX	XX
School	XX	XX	XX	XX
Restaurant	XX	XX	XX	XX
Warehouse	XX	XX	XX	XX
Hotel/Motel	XX	XX	XX	XX
Hospital	XX	XX	XX	XX
Supermarket	XX	XX	XX	XX
Apartment	XX	XX	XX	XX
Other	XX	XX	XX	XX

Top Energy Efficiency Measure Terms

OpenStudio-EDAPT Integration





.xml

PAT Results and QA/QC checks are uploaded to EDAPT

Open XML format enables other tool vendors to participate

.doc

.xls

Template Reports

EDAPT automatically documents project data & OpenStudio output

Detailed Portfolio Tracking

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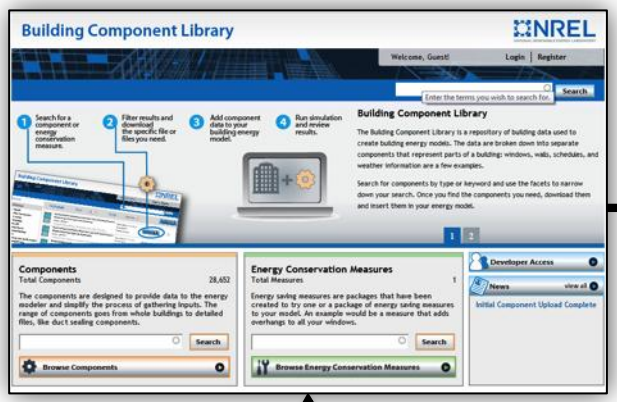
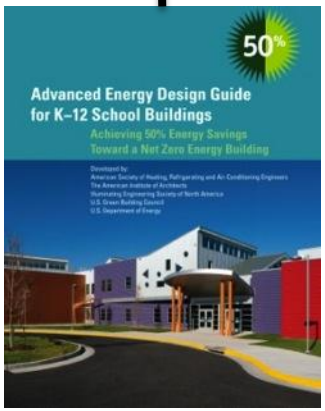
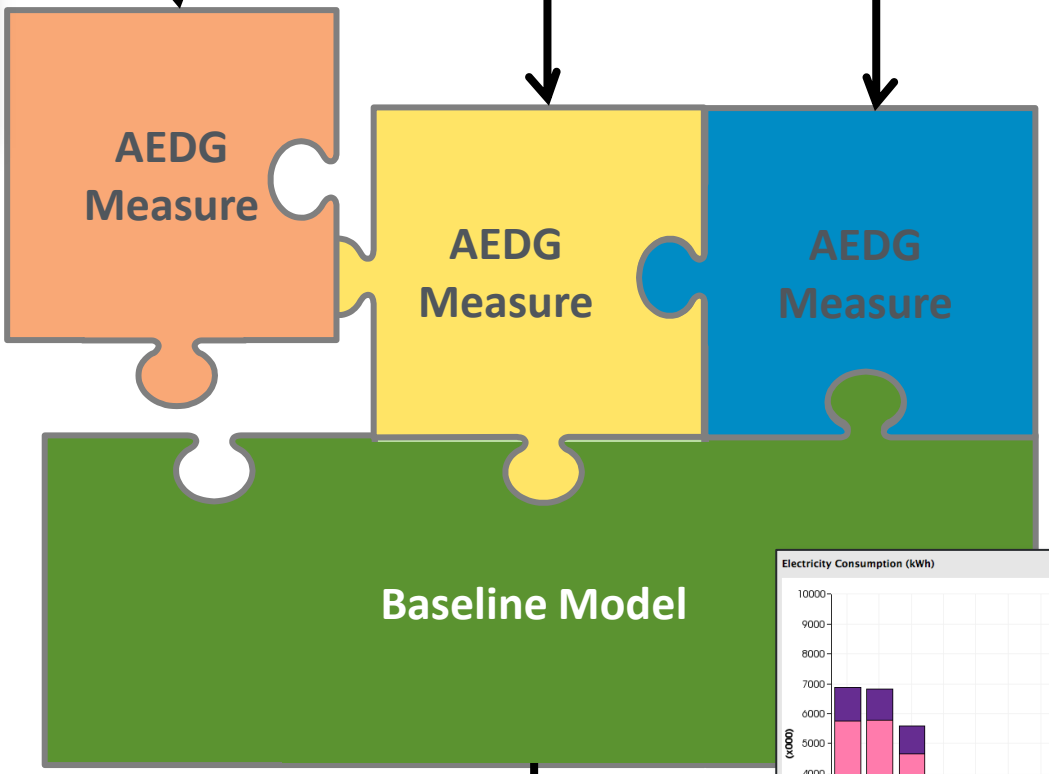
EDAPT is <u>One</u> Step to Maintaining EDA Viability



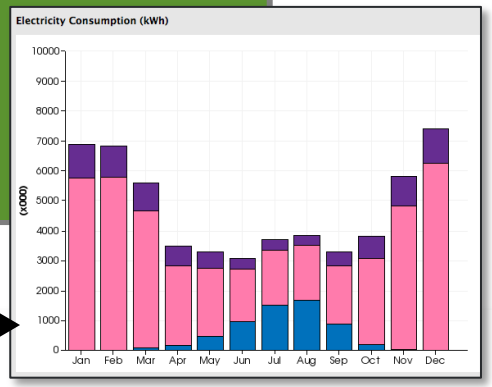
1) Search BCL for 50% Office or K-12 measures
2) Drag-and-drop on to code-compliant baseline
3) Perform project-specific analysis

ECM Modeling Approaches



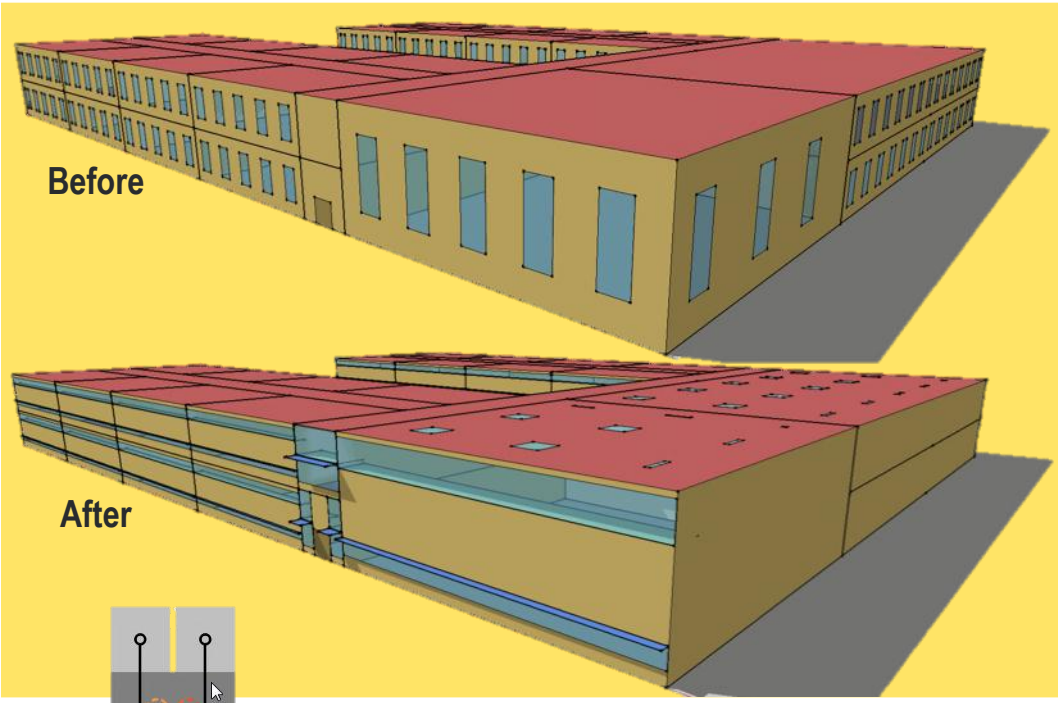


Customized Analysis

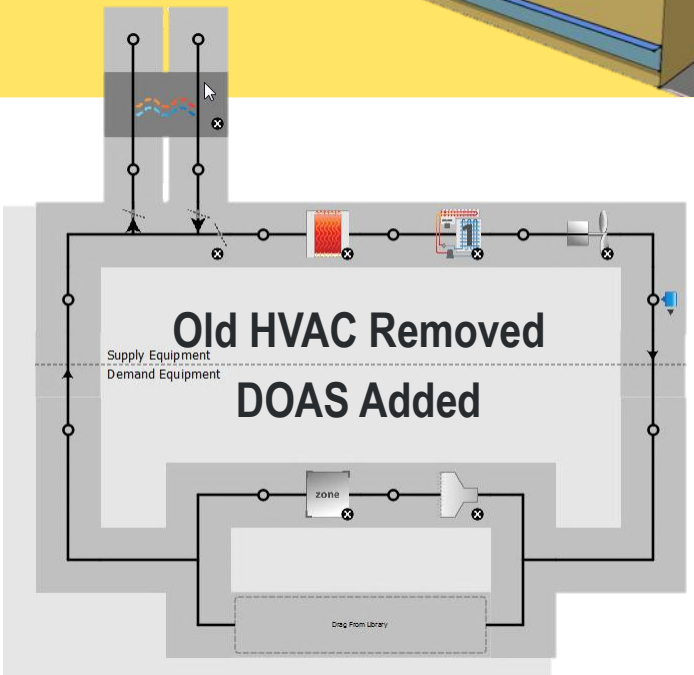


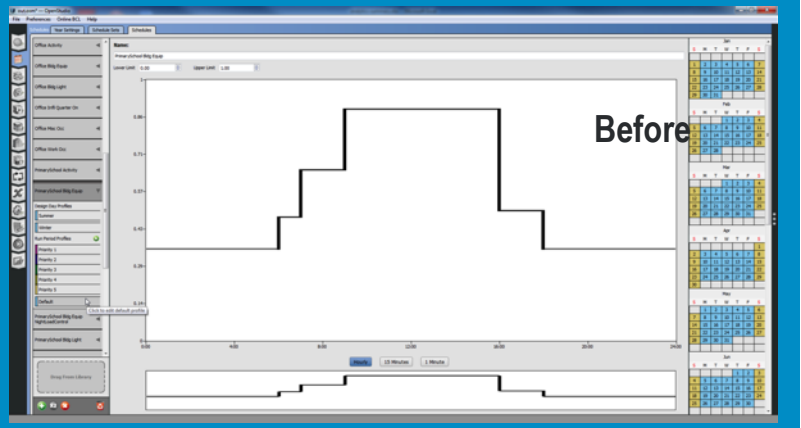
EDA processes must enable even faster, and lower cost analysis to maintain program viability.

Major Accomplishment - AEDG Measures



Daylighting Measure Package Applied



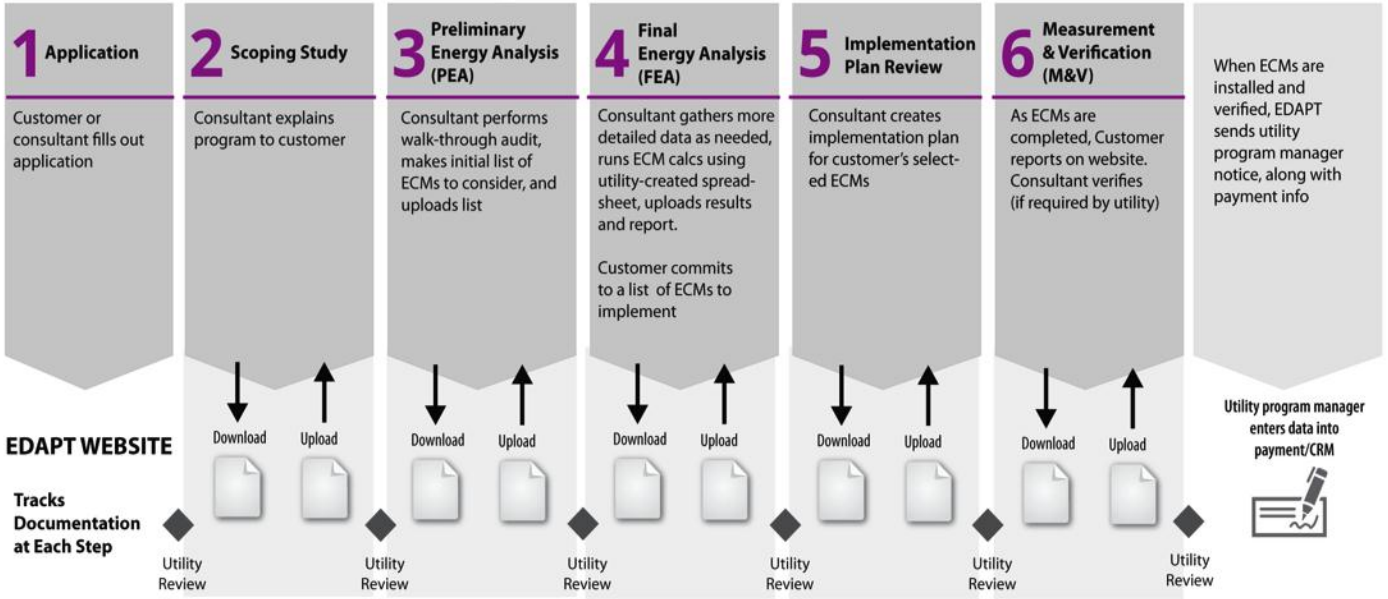


Night Setback Schedule Applied

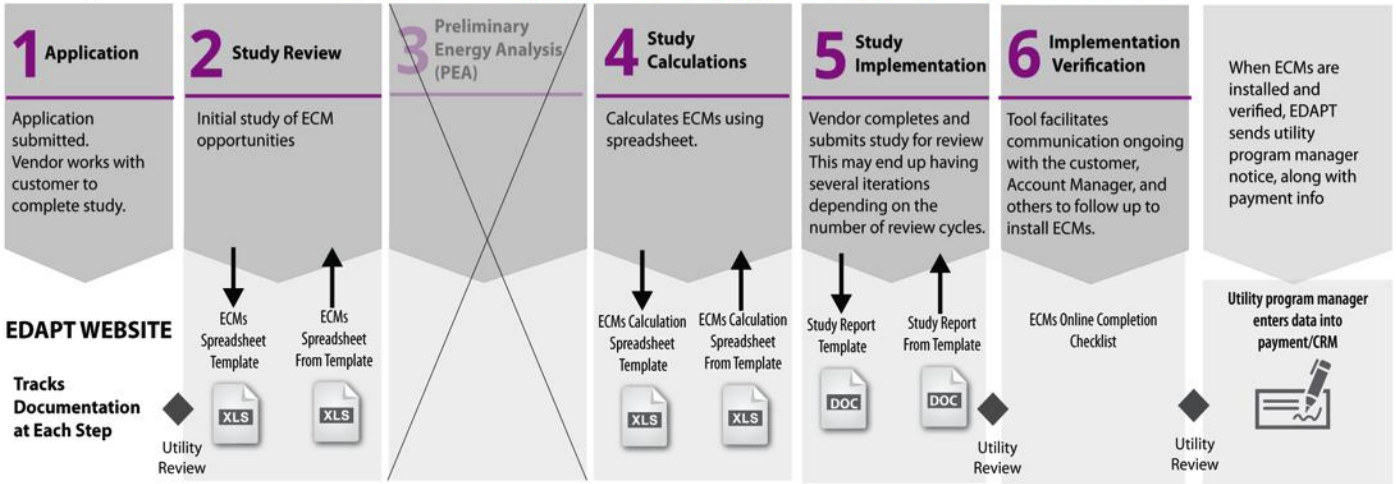
Major Accomplishment – EDAPT Extensions

- **EDAPT Generalized for use by multiple utilities**
- **Adding retrofit program tracking capability**
- **Added support for more modular workflows**
- **Additional data aggregations will provide greater value for DOE and utilities**

Steps in EDAPT **Retrofit Program Workflow**



Example Workflow: **Xcel Recommissioning Program Workflow**



Project Integration and Collaboration

Project Integration: EDAPT may be easily integrated with any OpenStudio-enabled tool (e.g. simuwatt, Asset Score, etc.)

Collaboration: Working group including Austin Energy, Com-Ed, Duke Energy, National Grid, and Xcel Energy reviewing proposed extensions and progress

Communications:

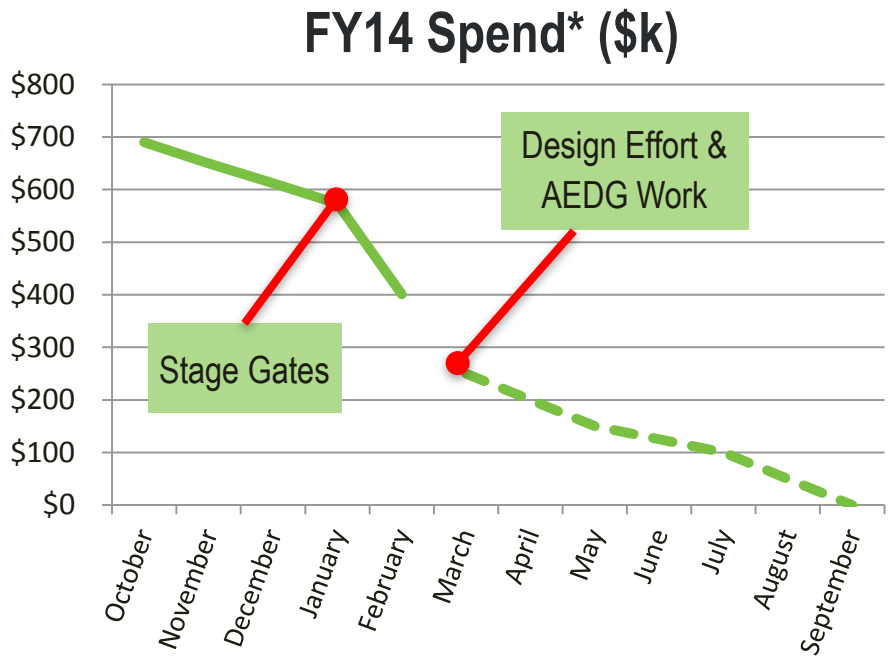
- Presentations at Fall eSource Forum and follow up scheduled for June
- Paper presented at IBPSA SimBuild 2013
- Webinars held for key utilities, BPA, and others
- Session on EDAPT and TPEx planned for BBA Summit in May
- Presentation at Utility Big Data Analytics Forum in May
- Additional webinars planned for:
  - CEC/CPUC/NYSERDA and other utilities
  - Third-party tool developers
- Upcoming publications at ACEEE Summer Study

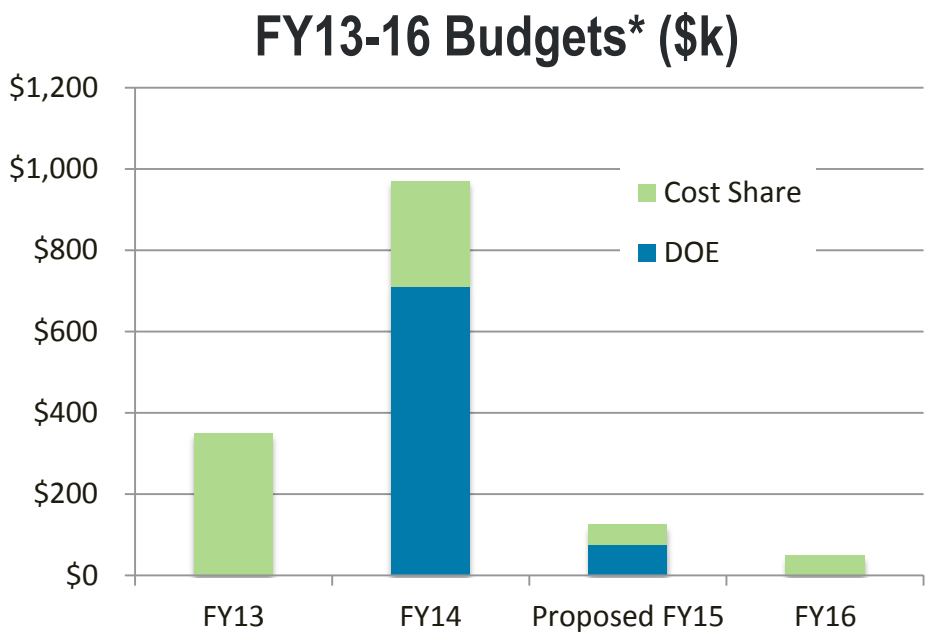
Next Steps and Future Plans

1. Complete retrofit and cost-data extensions and test workflows
2. Begin on-boarding process for early adopters
   - Utility training – provided by NREL
   - Consultant training – provided by third-parties
   - Tailoring support – provided by NREL or third-parties
3. Establish utility collaborative to cost-share hosting, maintenance, and implementation of new features
4. Propose recruiting additional utilities in FY15
5. Expand available AEDG measures for greater cost-reduction across more building types

REFERENCE SLIDES

Project Budget





Additional Funding Sources:

Xcel Energy

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Project Plan and Schedule

Project Initiation Date: Q1/FY14

Planned Completion Date: Q4/FY14 followed by some minor outreach effort

Release Schedule: Incremental demonstration and review of new functionality to stakeholders with beta in July and public release in September 2014