Better Buildings

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Energy Data Accelerator: Reviewing Goals, Objectives, Status

Kristen Taddonio, DOE

Kristin Field, NREL

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City-Utility Partners

Seattle

Minneapolis
Xcel

Cambridge
NSTAR/NU

Boston
NSTAR/NU

New York City
National Grid

Chicago
ComEd

Philadelphia
PECO

San Francisco
PG&E

Salt Lake City

Columbus
AEP Ohio

District of Columbia
Pepco

Kansas City
Kansas City Power and Light

Santa Monica
Southern California Edison

Los Angeles
LADWP and SoCalGas

San Diego
San Diego Gas & Electric

Chula Vista
San Diego Gas & Electric

Atlanta
Atlanta Gas Light

Austin
Austin Energy

Houston
Reliant

Resources, Activities, Outcomes

DOE Resources

- SEE Action *Utility Regulator's Guide to Data Access for Commercial Building Energy Performance Benchmarking*

- DOE's Data Aggregation Analysis to inform policy discussions on whole-building data access and privacy

- DOE best practice documents and convening on whole-building data access and benchmarking – technical, policy and stakeholder engagement
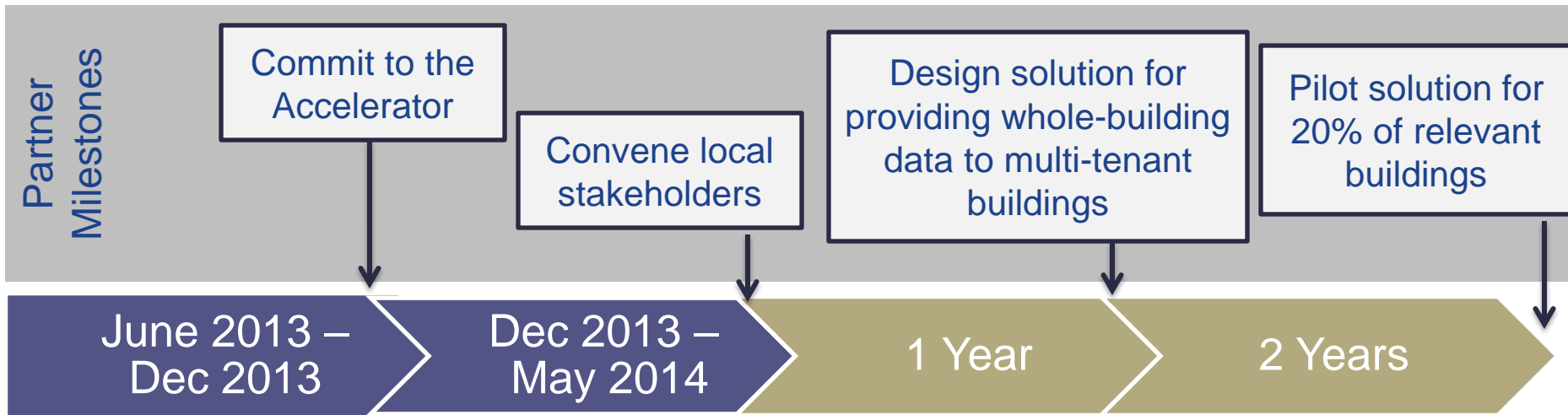
Accelerator Activities

- Partners provide content for sharing information on: utility systems for whole-building data, approaches for addressing privacy, and stakeholder engagement

- Partners engage local stakeholders on whole-building data access

- Partners design an approach for providing whole-building data to 20% of commercial or multifamily buildings in local community
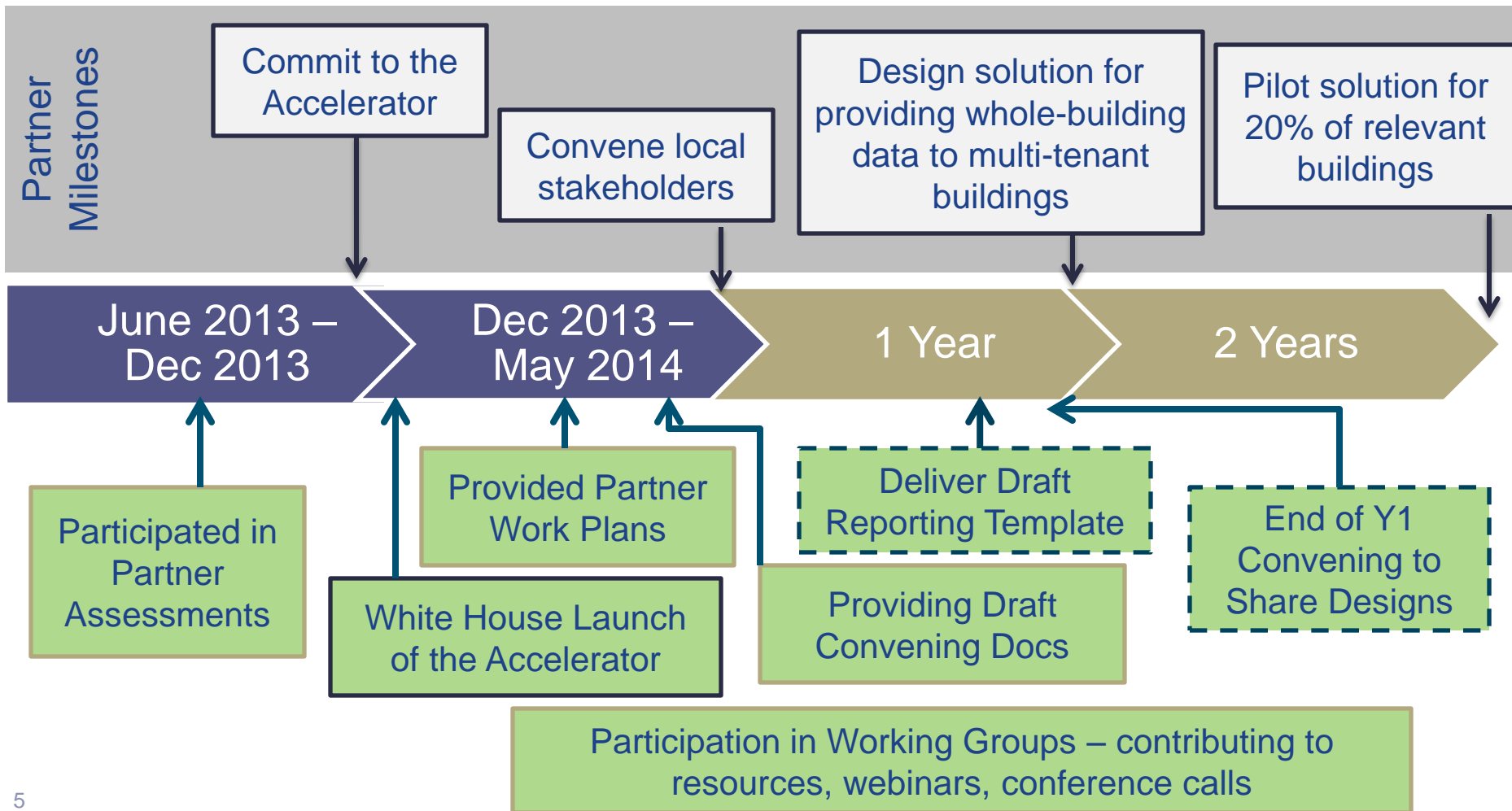
Accelerator Outcomes

- 19 Accelerator Partner pairs identify and adopt cost effective and standardized approaches for providing whole-building data

- At least 20% of building owners in Accelerator communities are more readily able to benchmark buildings

- Best practice approaches for whole-building data access are documented and disseminated

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Goals and Milestones

Partner Milestones

| Commit to the Accelerator | Convene local stakeholders | Design solution for providing whole-building data to multi-tenant buildings | Pilot solution for 20% of relevant buildings |

| June 2013 – Dec 2013 | Dec 2013 – May 2014 | 1 Year | 2 Years |

- Demonstrate **low-cost, standardized approaches** for providing energy data for the purpose of whole-building energy performance benchmarking.
- Develop best practice approaches for **reliable and secure** utility aggregation of energy data from multiple accounts to facilitate whole-building benchmarking while **protecting privacy**.
- Demonstrate tools that **streamline the transfer** of utility bill data to benchmarking tools.
- Long-term: demonstrate that whole-building data access can be a **standard practice**

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Timeline

Partner Milestones

- Commit to the Accelerator
- Convene local stakeholders
- Design solution for providing whole-building data to multi-tenant buildings
- Pilot solution for 20% of relevant buildings

| June 2013 – Dec 2013 | Dec 2013 – May 2014 | 1 Year | 2 Years |

- Participated in Partner Assessments
- Provided Partner Work Plans
- White House Launch of the Accelerator
- Deliver Draft Reporting Template
- Providing Draft Convening Docs
- End of Y1 Convening to Share Designs
- Participation in Working Groups – contributing to resources, webinars, conference calls

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Utilities and Local Government Partners have Committed to…

- **Engage with local stakeholders**, with an initial convening occurring in the first 6 months.

- Design and pilot an **approach for providing whole-building data for at least 20%** of multi-family and/or commercial buildings in the local community
  - Design the approach by the end of Year 1
  - Implement the pilot by the end of Year 2

- **Share results and lessons learned** with DOE and other Accelerator Partners as approaches are implemented

Local Stakeholder Engagement

Milestone 1: By May 2014, all partners will have begun engaging local stakeholders.

Activities and Resources to help with Stakeholder Engagement:

- Summarize and share best practices and approaches across Partners regarding local stakeholder engagement, examples include:
  - Stakeholder Engagement Guide and Check List – where key models and documents for stakeholder engagement will be culled to distill best practices
  - Case study presentation on December 3rd
  - Written case study and webinar recording available at:
  www.energy.gov/BetterBuildings
- Leverage relationships with strategic collaborators to bolster local efforts, including Better Buildings Challenge and Alliance building owners

Case Study: Commercial Building Data Access — Better Buildings Alliance

Facilitated questions

- What was your catalyst for action?
- Who is the primary convener?

  --city, utility, association, non-profit

- Who has proven to be a key participant/stakeholder and why?
- How did you get started?
- What has been the biggest hurdle complication?
- What has been the biggest surprise?

Energy Data Accelerator

Karen Penafiel

VP, Advocacy, Codes and Standards

BOMA International

BOMA International

- 100+ local associations and affiliated organizations

- 17,000 individuals

- 9 billion square feet of office space

- $100 billion marketplace

- Key goal areas: advocacy, education, research, standards

- 32 staff members in D.C. and a combined 200+ staff across the U.S. and Canada

BOMA's Green Goals

Identify barriers

Find solutions

Motivate action

Total Private Sector Expense Ratios   (All Buildings)

- Cleaning 12%
- Repairs/Maintenance 15%
- Utilities 20%
- Roads/Grounds 2%
- Security 5%
- Administrative 12%
- Fixed Expenses 34%

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Identify the Barriers
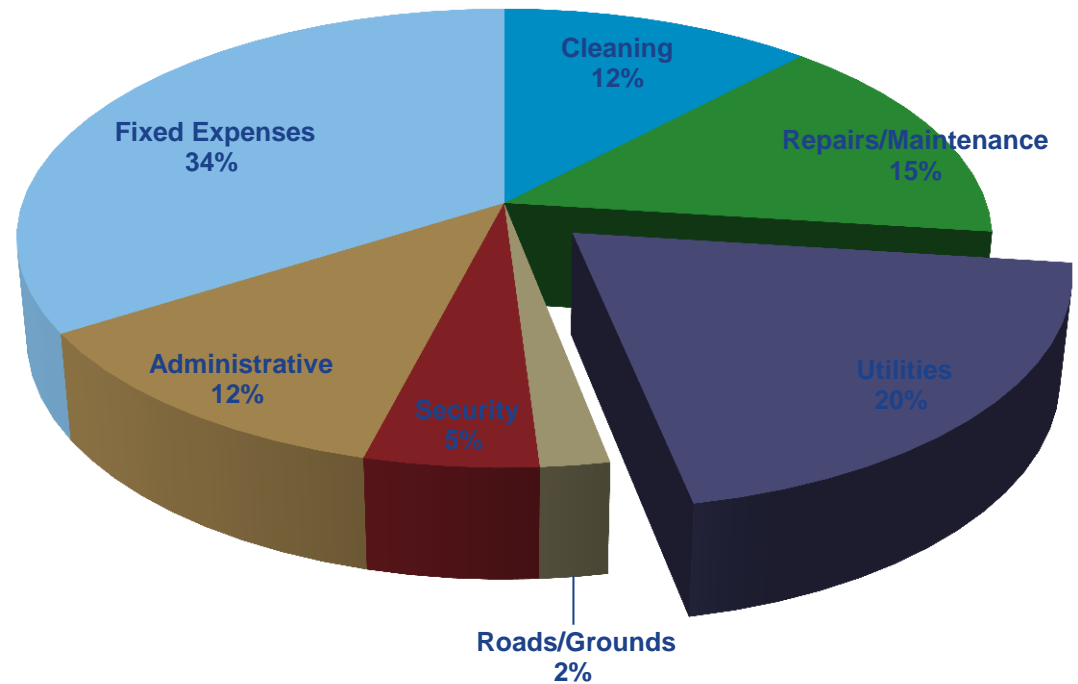
Understanding data is the key to address multiple barriers

- **Commonly cited barriers to going GREEN:**
  - The developers blame the building owners
  - **The building owners/managers blame the tenants**
  - **Tenants want efficient work spaces, they just don't always want to pay for it**
  - **Split incentives**
  - **Lease structures/metering**
  - **Access to data**
  - **How to motivate occupant behavior**
  - Education, education and re-education!

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Data Access = Key First Step

Buildings need data to benchmark

Benchmarking = critical step to understanding energy use and retrofit opportunities

Without data, *building owners* won't understand energy use or opportunities

Without data, *utilities* won't understand energy use or opportunities

Data will unlock many other opportunities beyond benchmarking

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(Just an Aside… BOMA and Benchmarking…)

- BOMA fully supports voluntary benchmarking

- BOMA opposes mandates

- Upside of mandates: increased focus on data access issues

- Data for all, not just in jurisdictions with mandatory benchmarking

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Finding Solutions

- **Signed consent from separately metered tenants for utility to provide data**
  - In a large, multi-tenant office building, this could be *hundreds*…
  - Some utilities charge burdensome fees and/or cumbersome process
  - Not all tenants willing to share information

- **Best Case Scenario:**
  - Building owners have stack of bills to input
    - Time constraints
    - Accuracy concerns
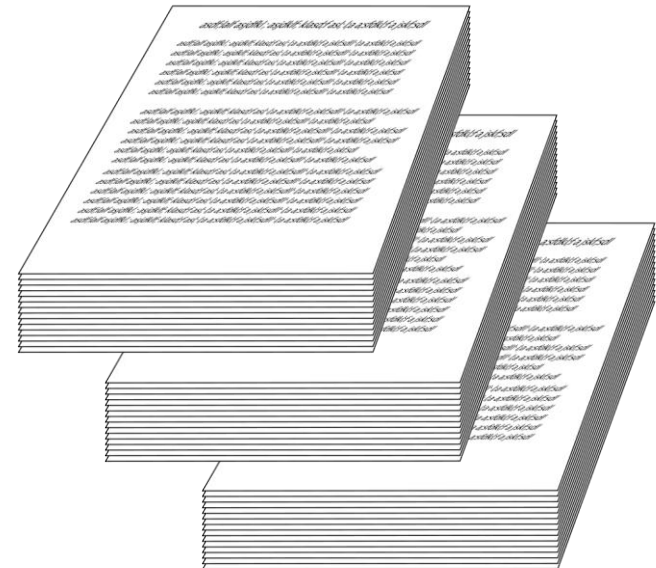
Finding Solutions

- ## Lease language
  - BOMA Green Lease*: *Tenant shall be required to submit to Landlord energy and water consumption data, including total usage and total charges as they appear on Tenant's electric, gas, water and other utility bills, in a format deemed reasonably acceptable by Landlord.*
  - Slow way to motivate change
  - Some tenants will negotiate this out of the lease

*Commercial Lease Guide: Guide to Sustainable and Energy Efficient Leasing for High-Performance Buildings, BOMA International, 2011

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Finding Solutions

- **Energy Data Accelerator**
  - Develop best practices
    - For providing utility data for whole-building benchmarking
    - For reliable and secure aggregation of data
    - Address tenant privacy concerns
    - Standard data formats and automated data dumps
  - Motivate stakeholders to implement data access programs with or without benchmarking/disclosure mandates
  - Peace of mind for all: utilities, building owners/managers, tenants

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Motivate Action

- Make energy use and costs more transparent
- Use data to drive retrofit decisions
- Use data to drive customer service programs
- Use data to improve tenant communication and action

Motivate Action

- Studies show:
  - 62% of buildings that benchmark make investments to improve energy management processes
  - 84% invest in building upgrades and behavioral efficiency projects

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Questions?

Karen Penafiel

VP, Advocacy, Codes & Standards

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Principles for Delivery of Energy Usage Information

Philip Henderson
Natural Resources Defense Council (NRDC)

Data analytics is key innovation strategy for many businesses...

…but for building owners, simple meter data for **<u>own</u>** buildings is often difficult to obtain.
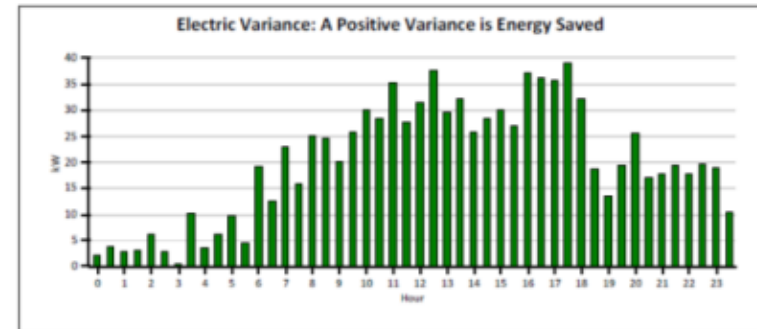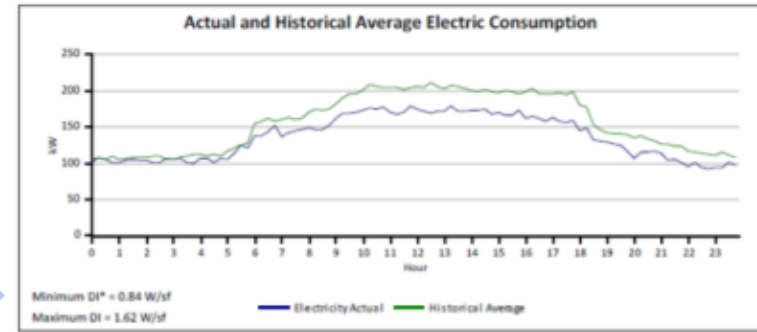
Plans to deliver usage information in new ways raises many questions.

- **Technology**

- **People**

- **Process**

- **Legal framework**

Other frameworks for sharing important information have been successful.

- Financial institutions share personal credit information with customers, credit bureaus, & other lenders.
  - Fair Credit Reporting Act passed in 1974.
  - Millions of transactions per day.
  - Most complaints are about report accuracy.

- Property information is made available – home sale price, key terms of mortgage, property taxes, etc.
  - Most cities and counties automated access to property records
  - Data enables mapping, commerce, planning, and more.

- Health care
  - Rapid move to "e-docs"
  - Sharing regulated by HIPAA

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Some lessons from other successful regimes:

- Focus on people and processes, not just technology.

- Minimal "paperwork" burden on building owners, tenants, and utilities to exchange information.

- Emphasis on standard documents and registration, not manual review of every transaction – impractical for owner and utility.

- Delivery of information is a valuable service to customers.

*Equifax, Experian, TransUnion reported ~**$8 billion** revenue (2013) providing credit reports and related services.*

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Ideas on near term "to do's" (in parallel)

1. Implement systems for automated delivery of information to owner or owner systems.

   - Enable owner to benchmark, and beyond…smart meter data for analytics

2. Reasonable standards for whole-building information with separately metered spaces.

   - States should not be far apart on exact same question.

3. Guidance for owners to obtain tenant/customer permission in standard lease documents.

   - Model lease language that utilities can accept.

4. Processes to verify customer permission.

   - Utility should not have to manually review every lease agreement.

Philip Henderson
Natural Resources Defense Council
phenderson@nrdc.org

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Utility Perspective
Data Privacy and Cost Recovery

Drew Quirk – Xcel Energy

Service Area
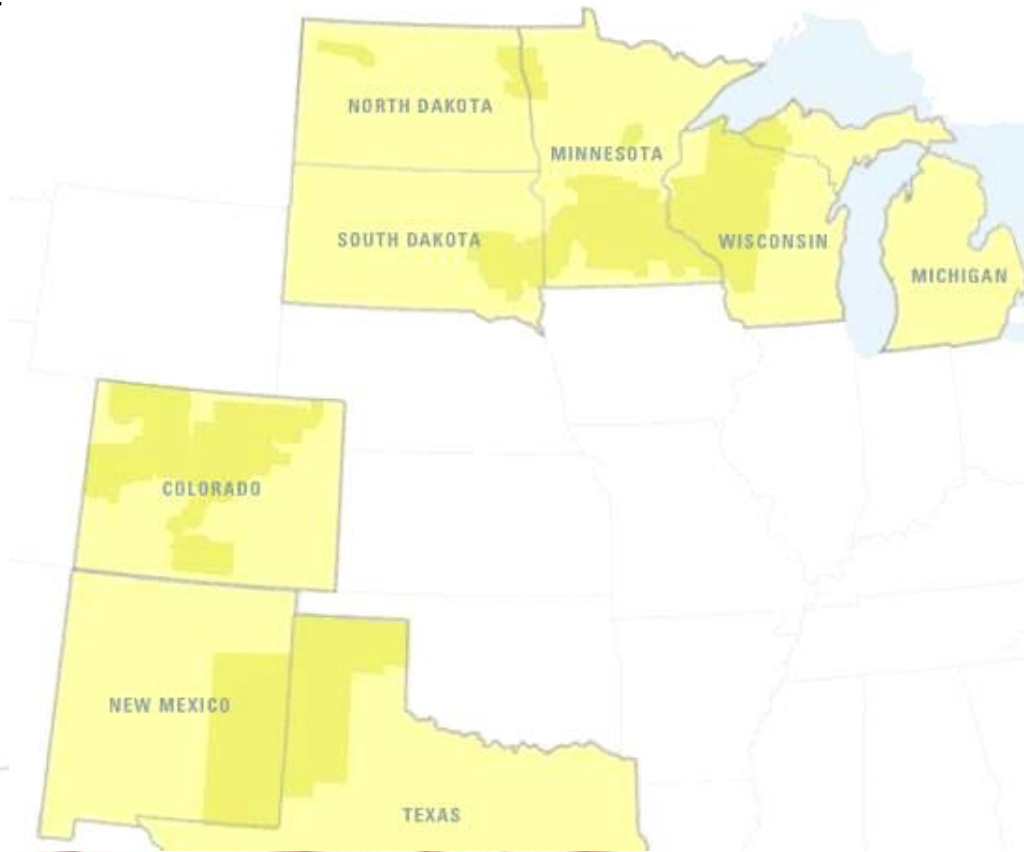
State	Customers
MN	
ND	1.5M
SD	
WI	
MI	0.3M
CO	1.7M
NM	
TX	0.4M

Company Structure
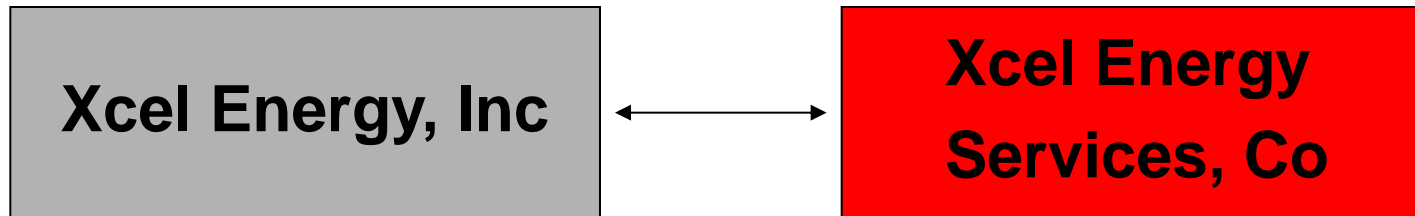
- **Xcel Energy, Inc**
  - Holding company for four operating companies
  - Each operating company has its respective Regulatory and Legal Departments
- **Xcel Energy Services, Co**
  - Provides overall strategy and support for Operating Companies
  - Marketing and IT

Regulatory Landscape

State	EE Engagement at State Level	Data Privacy Rules	Aggregation Rules
MN	High	No	?? (TBD)
ND	Limited	No	n/a
SD	Limited	No	n/a
WI	3rd Party	No	n/a
MI	Limited	Yes	15/15
CO	High	Yes	15/15 (?)
NM	High	No	n/a
TX	Limited	No	n/a

Service Company Mission

Our customers are universally….unique
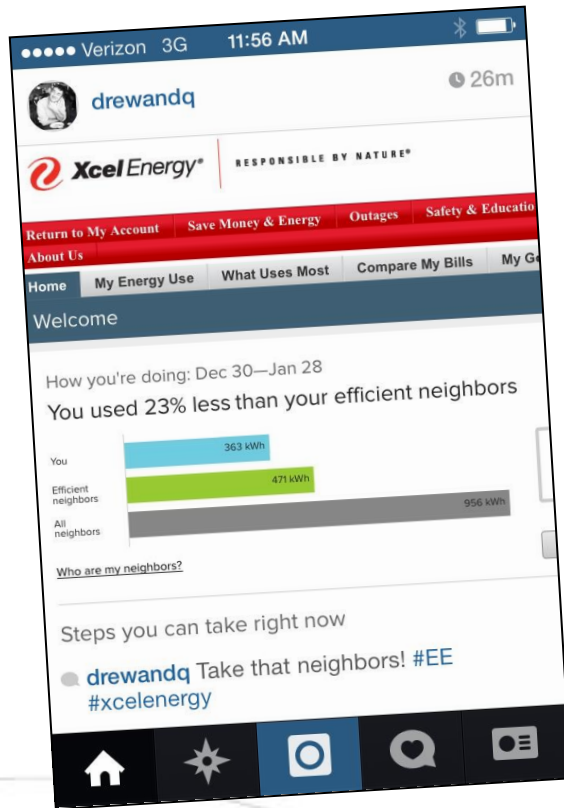
Areas of Concern

- **Lack information creates difficult position for utility to defend a more relaxed aggregation threshold. Needed are concrete examples of**

  - ◆ **Actual customer expectations for privacy and confidentiality**

  - ◆ **Statistical validation of aggregation level ability to mask individual customer identity**

Customer Expectations: Survey Results

What is your level of concern with third parties having access to your monthly energy usage data without your knowledge and consent?
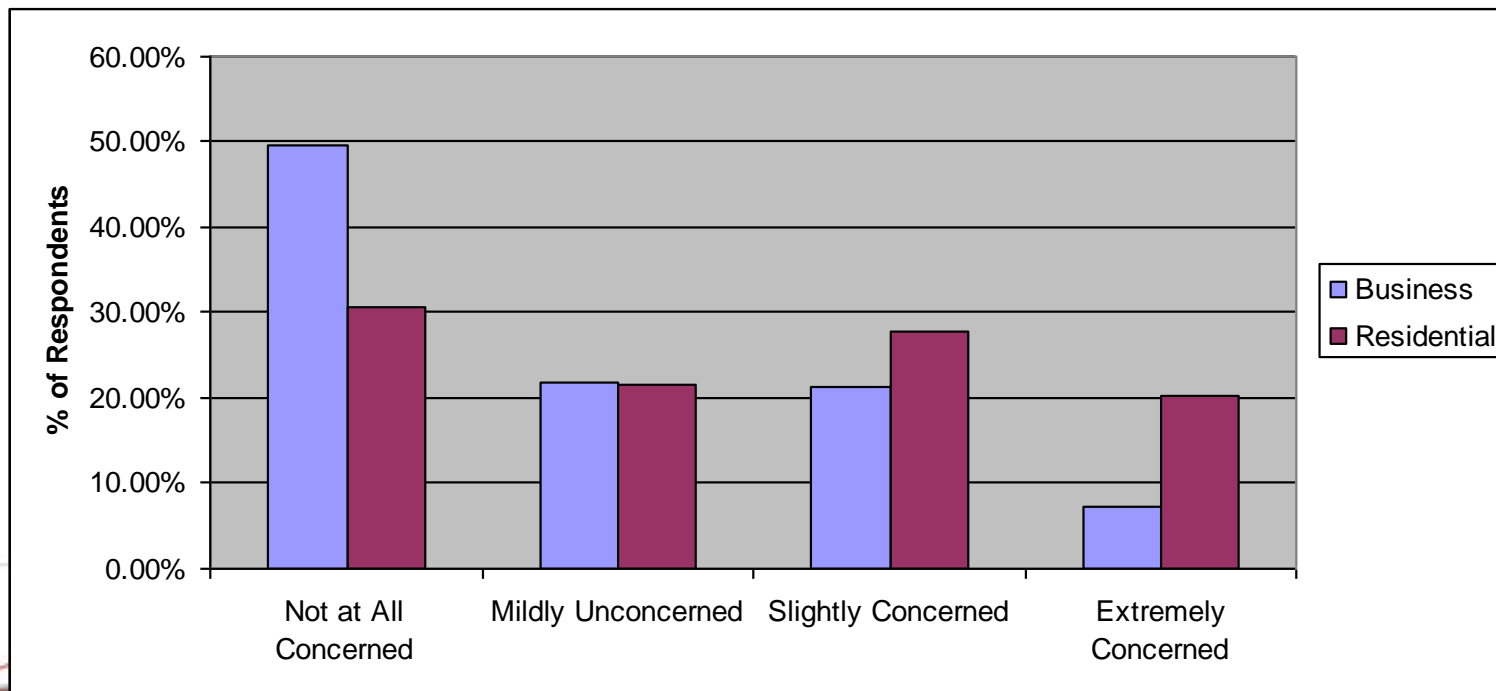
Statistical Documentation of Aggregation Threshold

- **PNNL Aggregation Study**
  - ◆ **XE is providing data**
- **Other analysis**
  - ◆ **Requesting PUC in MN to commission a study to examine as well**

Cost Recovery

- **Over-arching themes**
  - ◆ **Don't increase rates, don't increase O&M**

Cost Recovery Options

- **Conservation Improvement Program**
  - ◆ **1:1 (+) recovery, but needs to have clear path to energy savings**
- **Base Rates**
  - ◆ **Capitalize like other physical assets**
  - ◆ **Fall through cracks as O&M**
- **Combination Approach**

Conservation Improvement Program

- **Clear path for integration into existing energy efficiency, demand response, and renewable program portfolio**

- **Mounting evidence for indirect energy efficiency benefit**
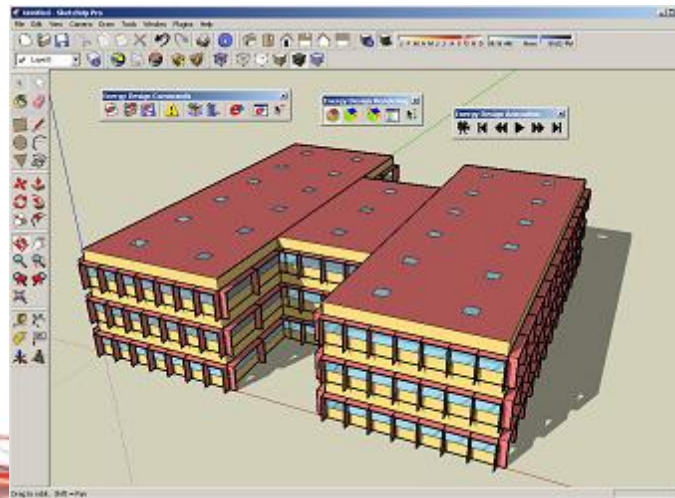
Base Rates

- **Conventional IT investment strategy**
- **Only option in some service areas**
- **Highly competitive and shrinking budget**

Figure 50: Adjusted Demand Scenarios for Peak, Combined IOUs

- High (High Demand, Low AAEE Savings)
- Mic (Mid Demand, Mid AAEE Savings)
- Low (Low Demand, High AAEE Savings)
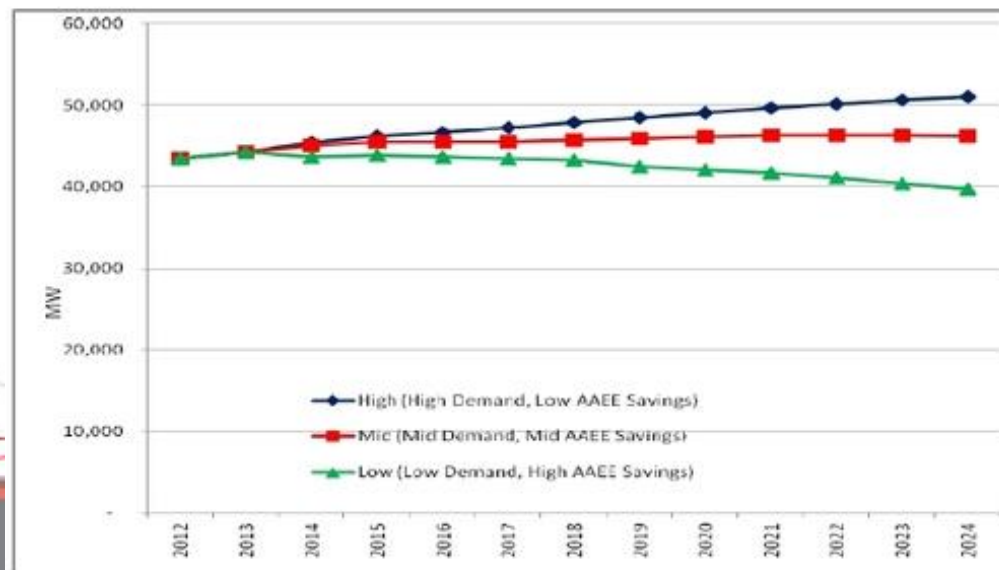
Source: California Energy Commission, Demand Analysis Office, 2013

Combination Approach

- **Handle overall platform enhancements through base rates**

- **Ongoing costs through CIP where applicable**

Thank You

- **Drew Quirk**
- **Product Developer**
- **andrew.j.quirk@xcelenergy.com**
- **612-337-2024**

MyData Web-Service & Seattle Benchmarking:
Whole Building Energy Usage Data

Better Buildings Summit - May 2014

Nicole Ballinger – City of Seattle
Energy Benchmarking Program
Nicole.ballinger@seattle.gov

Irena Putrya – PSE
Irena.Putrya@PSE.com
Program Coordinator

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PSE & City of Seattle

PSE provides service to more than: 1.0 M electric & 750,000 natural gas customers

About 70% of required Seattle buildings (~2,600) need natural gas usage to comply with City of Seattle ordinance
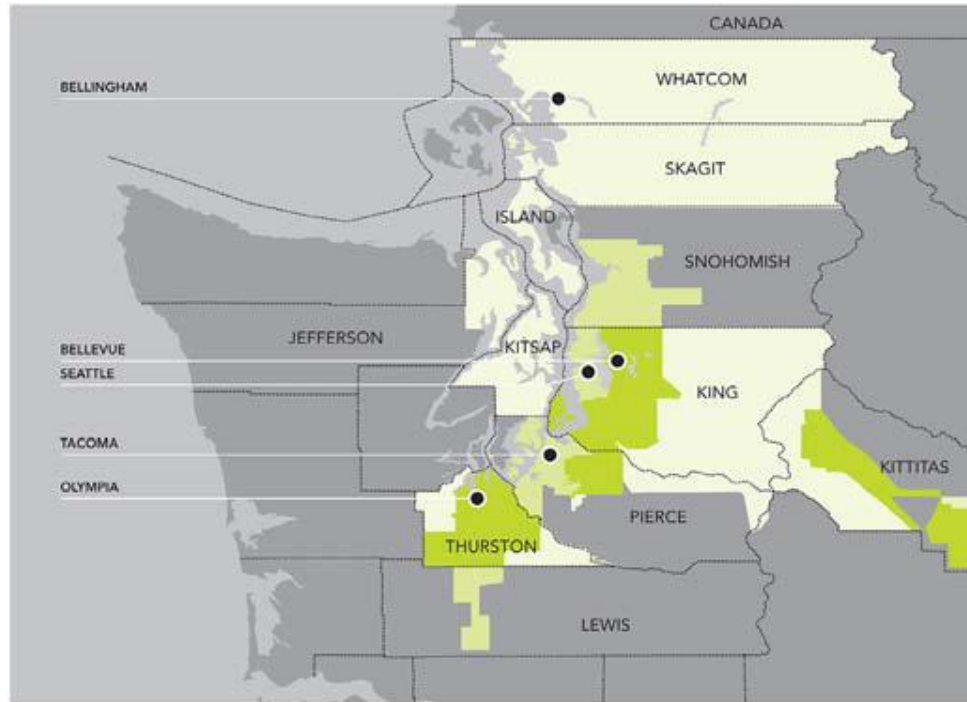
Combined electric and natural gas service
Electric service
Natural gas service

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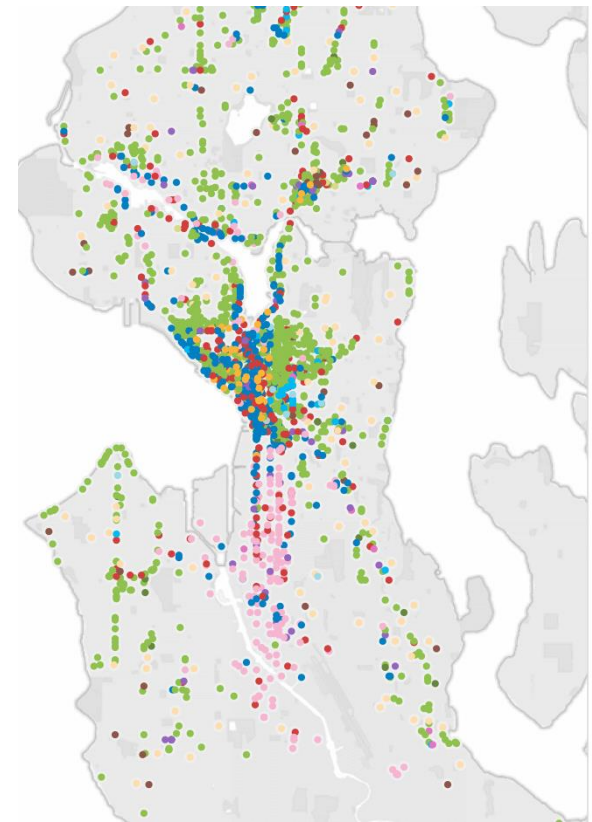
Energy Usage Data Background

- Since January 2010, **WA state law** (RCW 19.27A) has required utilities to provide whole building energy usage data to building owners through EPA's Energy Star Portfolio Manager website in a manner that does not disclose personally identifying information.

- Restated in **2010 Seattle Benchmarking & Disclosure Ordinance** (#123993) that utilities must upload information within 30 days & "may establish and require building owners to pay a reasonable charge."

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The Situation

Tenant energy use (But don't tell me who used what!)

Owner / Manager (A bit panicked because of City ordinance deadline.)

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Seattle: Three Utilities, all Different
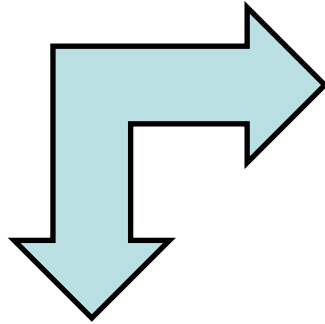
Owner/manager enters building square footage & use details and signs up for utility "data exchange"

ENERGY STAR®
PortfolioManager®
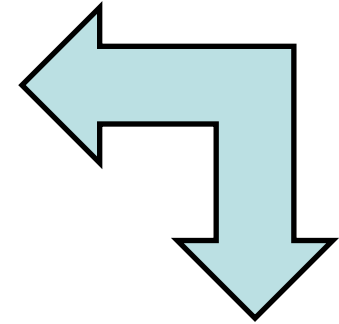
Utilities provide whole building energy data via "data exchange"

Seattle City Light

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SEATTLE STEAM CO.
Sustainably Reliable
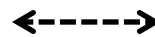
Owner reports whole-building energy use/sf & ENERGY STAR scores to **City of Seattle**.

natural gas | electric
steam | district

ENERGY USE INTENSITY

total annual energy use (kBtu) ÷ total square feet (sf) = Energy Use Intensity (kBtu/sf/year)

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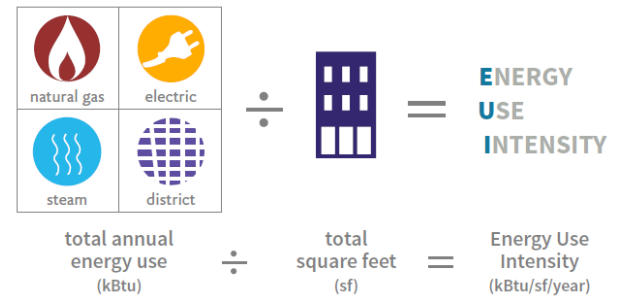
Issues

- Customer confusion
  - City Light is Electric, PSE is Natural Gas, City Runs Ordinance
- Different steps for obtaining data
  - City Light – Fill out paper form and sign
  - PSE – Use MyData website
  - Steam – Start with online account access
- Permission from tenants
  - PSE's – Private Utility, uses the "less than 5 rule" to protect privacy
  - City Light – Public Utility, uses "less than 2"
  - Steam – Need account access
- Old PSE system, required new requests annually, City Light uploaded monthly (customers thought they were done)
- New Portfolio Manager – July 2013

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PSE - Key Evaluation Results

- Self-service, user-friendly website

- Monthly data upload on a subscription basis

- Easy link to Portfolio Manager

- Accept either meter numbers or addresses

- Funnel all data requests through the new web-service

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PSE's Solution – MyData 2.0

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build 10.15.2013
MyData

REGISTRATION
* denotes a required field

Will you be reporting any usage data to EPA's Portfolio Manager? *
◉ Yes ○ No

Do you have an EPA Portfolio Manager account? *
◉ Yes ○ No

LINK MY EPA ACCOUNT
EPA Username:*

buildingowner

EPA Password:*

••••••••

EPA SIGN IN

EPA Account ID:

EPA Account ID

In Step 1 the building owner indicates if she is reporting data to Portfolio Manager and links to her Portfolio Manager account

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PSE's Solution – MyData 2.0

Step 2 – the owner provides either meters or addresses for each building or the information is populated from Portfolio Manager

BUILDING INFORMATION

Garage

Your request is pending required release forms.
Click the Continue button if you have forms to upload.

Main Street Apartments

Town Center

Your request is pending required release forms.
Click the Continue button if you have forms to upload.

ACME Manufacturing   DELETE

Manufacturing/Industrial Plant

Please select either meter numbers or addresses. *   ○ Meter number(s)   ○ Address(es)

Add new building

[BACK]   [CONTINUE]

On this page you will provide detailed building information. You can see a snapshot of your progress in Your Building Snapshot below.

Meter numbers:
Can be found either on your utility bill or on the meter itself. Supply all the meter numbers for the units/suites/apartments you would like data for. Please remember that an individual unit can have multiple meters attached to it (electricity and natural gas).

Addresses:
Provide the address that best defines the building in order to capture all tenant spaces. For example, provide either the individual addresses of each unit in the building; the primary address of the building itself; or a single building address with apartment number ranges (e.g. 1235 Main Street, 100-150).

For accuracy and better response time, please provide the address as it is listed on the PSE bill, if available.

After you have submitted your building information, you will receive an email within 3 to 5 business days. Then you will login to MyData and navigate to Step 3 of 3. There you will review your building summary and select your reporting preferences.

Your Building Snapshot

Garage	Release Forms Required
Main Street Apartments	Request Approved
Town Center	Release Forms Required
ACME Manufacturing	In Progress

PSE's Solution – MyData 2.0

In Step 3 – the building owner can select the timeframe, and delivery options for each building report

PSE's Solution – MyData 2.0

MyData

REPORTS FOR 'Dog Park'

The Report Page

Dog Park
Aggregated Data
10/21/2010 - 10/21/2013 (Last 36 months)
Report received: 9/17/2013

Please accept the request dates, or choose a new date range, then click View Charts.

Start Date: 10/21/2010

End Date: 10/21/2013

View Charts **Export to CSV**

Electric Comparison
December 2010 to August 2013
Building: Dog Park

Legend:
- 9/2011 – 8/2012
- 9/2012 – 8/2013

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Portfolio Manager View

Lessons Learned

- Customer education – checklists, reminders!

- Help desks (phone & email)

- Customer care check-ins

- In an ideal world, 3 utility systems would be more similar

- Know what "end goal" of customer is. Do they need to comply with ordinance? Remind them!

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Progress

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Additional slides for discussion…

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- **The ability to do a bulk upload of meters for customers who have more than 15 meters.**

User Info
James Dean
JD@toocool.com
425 456 2491

Building ID: #00000570   Carriage House   Status: Building Submitted by User

EPA Property ID: 3912946   Type: MultifamilyHousing

+ Add New Address   Current Address Count: 1   Remaining to resolve: 1

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Special Features

Additional Data for Resource Conservation Managers and Business Services

| Avg. temp |
| Degree days |
| Kvar |
| Kw |
| Rate schedule |

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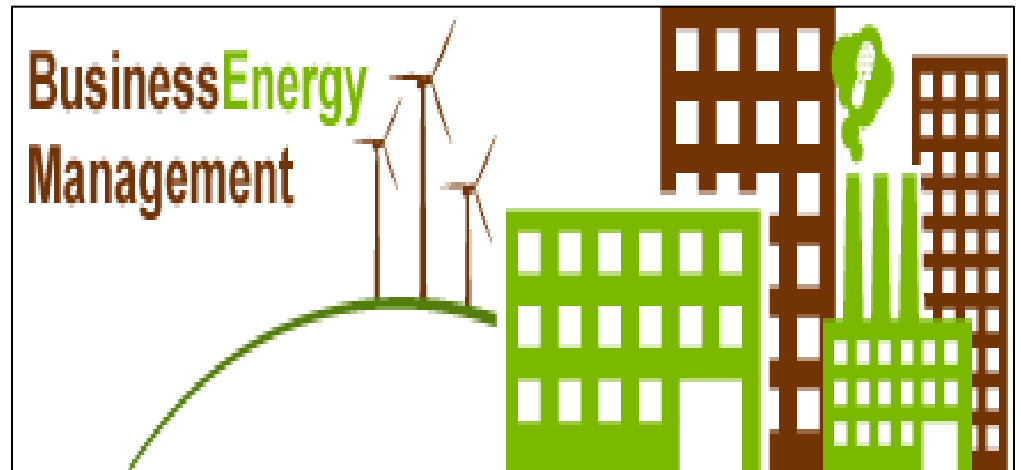
- **Admin tool was created in the new system which will help track customer use, manage and track all release forms and requests.**

- **Each step that needs to be fulfilled is highlighted in yellow.**

			Date	Request ID	Organization	Requester	Building ID	ABS Building Name		Status	Email
🏠			02/24/14		King County Housing Authority	Jenna Higgins	#00000570	Carriage House	⭐	Building Submitted by User	✉
🏠			02/24/14		McKinstry Company	McKinstry Company	#00000566	Parsons Plaza	⭐	Building Submitted by User	✉
🏠	✏		02/22/14	#00000069	Epa	EPA Only	#00000558	My Bank	⭐	Release Forms Required (Tenant Change)	✉
🏠			02/20/14		CC&RS,llc	Cathie Koll	#00000551	Greenlake Vista		Building Submitted by User	✉
🏠	✏		02/20/14	#00000065	WA State Department of Health	Andie Keller	#00000542	DOH ARAB RD WAREHOUSE	⭐	Request Processing	✉
🏠			02/19/14		Urban Storage	Travis Ameche	#00000547	Seattle Self Storage		Building Submitted by User	✉
🏠			02/19/14		Urban Storage	Travis Ameche	#00000546	Metro Heated Storage		Building Submitted by User	✉
🏠			02/19/14		Urban Storage	Travis Ameche	#00000545	Roosevelt Self Storage		Building Submitted by User	✉
🏠			02/19/14		Urban Storage	Travis Ameche	#00000544	Kirkland Way Storage		Building Submitted by User	✉
🏠			02/19/14		Urban Storage	Travis Ameche	#00000543	Magnolia Bridge Storage		Building Submitted by User	✉

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Sustainability & Environment

PSE PUGET SOUND ENERGY
The Energy To Do Great Things

Why Measure and Track Energy Use?

- Better understand a facility's electricity consumption over time
  - "You can't manage what you don't measure"
- Compare a building's consumption patterns with others
- Building managers can "ask the right questions" to
  - Identify opportunities to improve energy efficiency
    - Investments in efficiency upgrades
    - Behavior modification
  - Participate in demand response programs
  - Manage peak load
  - Eliminate waste by detecting anomalies
- Reduce energy costs
- Reduce Greenhouse Gas emissions
  - In 2012, power plants accounted for about 40% of U.S. carbon pollution

The Tools

- Interval electricity usage data
- Advanced Metering Infrastructure ("Smart Meters")
- Third-party analytics software
  - Translate raw data into actionable information
  - Information on a single building or entire building portfolio
  - Current and historical usage reporting
  - Interactive facility location maps
  - Set corporate sustainability goals and track progress

The Tools

- **Energy benchmarking**
  - EPA's Portfolio Manager
  - Electricity, Natural Gas and Water usage
  - Building attributes
    - Building type (office, hospital, K-12 school)
    - Hours of operation
    - Square footage
  - Normalized for regional weather
  - Benchmarking score (0 to 100)
  - Required in the District of Columbia for buildings over 50,000 sf, approximately 1,700 buildings
  - District Department of the Environment will publish benchmarking scores annually
  - Pepco worked closely with DDOE during the implementation of the benchmarking mandate

Better Buildings
U.S. DEPARTMENT OF ENERGY

U.S. DEPARTMENT OF
ENERGY

Current Methods to Access Pepco Usage Data

- My Account: A web portal to view individual account usage history. Available to over 20,000 commercial customers in DC and MD

- CEO Online: Used by approximately 287 large commercial customers

- Aclara: Interval data available to small commercial customers. Used by an average of 125 customers each month in DC and MD

- Green Button data: Average 500 data downloads per month (residential and commercial, DC and MD)

- Approximately 230 manual requests for energy history received from DC building owners for benchmarking

The Challenge

- Give customers what they want, in a timely manner

- Includes building owners

- New billing system currently under development. Expected completion in 2015

- Unable to attach external systems during development

- Manual process for fulfilling usage requests

- Provide a single source of data access for customers and building owners

Privacy Issues

- Strict policies to protect confidentiality of customer information. Includes usage data

- Written authorization from the customer of record is required

- Building owners (management firms) are often not the customer of record

- Impractical for building owners to obtain authorization from multiple tenants in a building

Aggregate Building Data

- Provide aggregate building usage data without individual customer authorization

- Buildings with five (5) or more electric accounts

- Building owners are responsible for providing account identification

- May submit Meter Number for each service connection

- Usage request form

- Proposed legislation before the DC Council will require the electric and gas utilities to provide building owners with automated online access to energy data and data transfer to Portfolio Manager
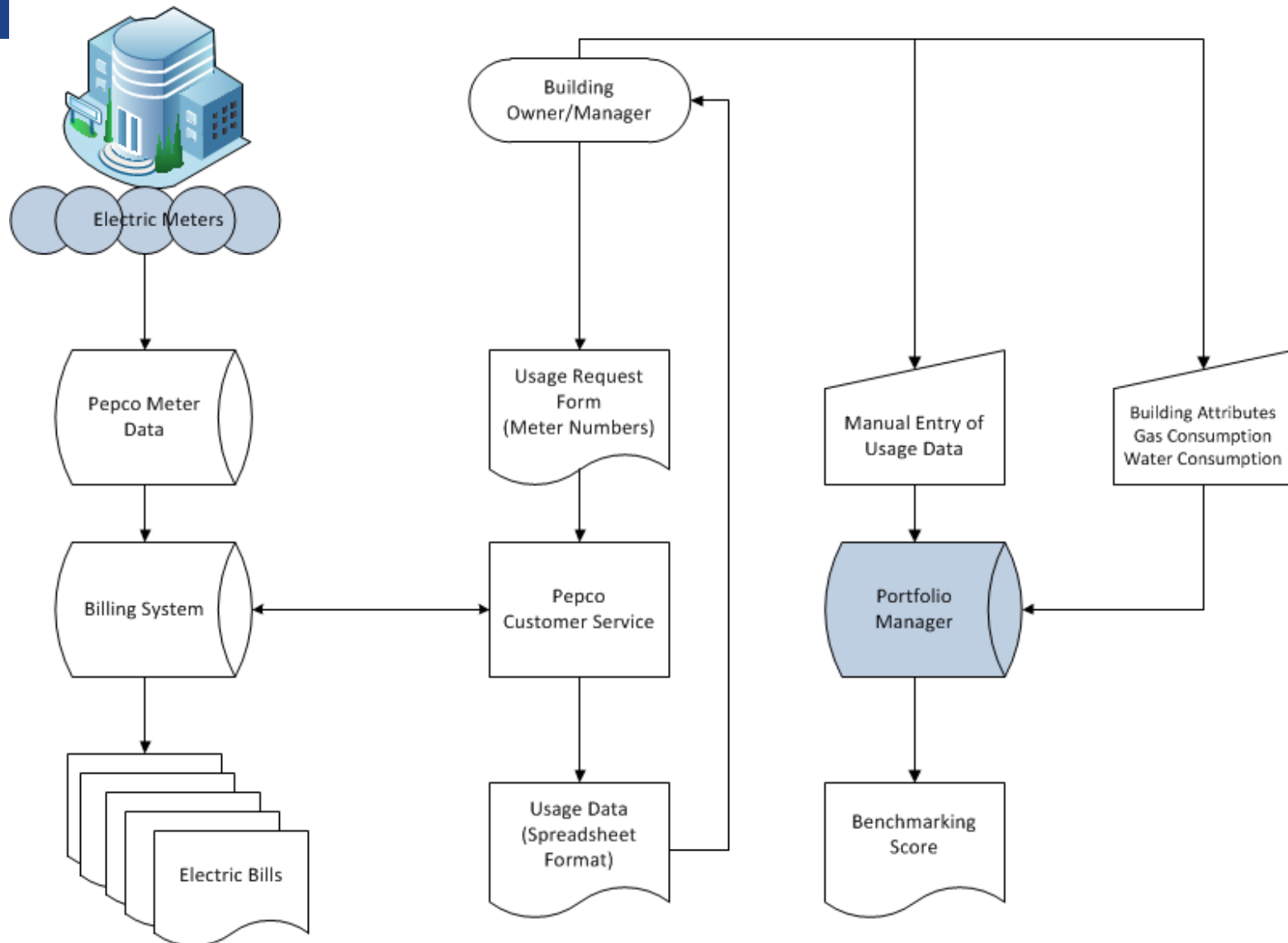
Electric Usage Data Flow (Proposed)
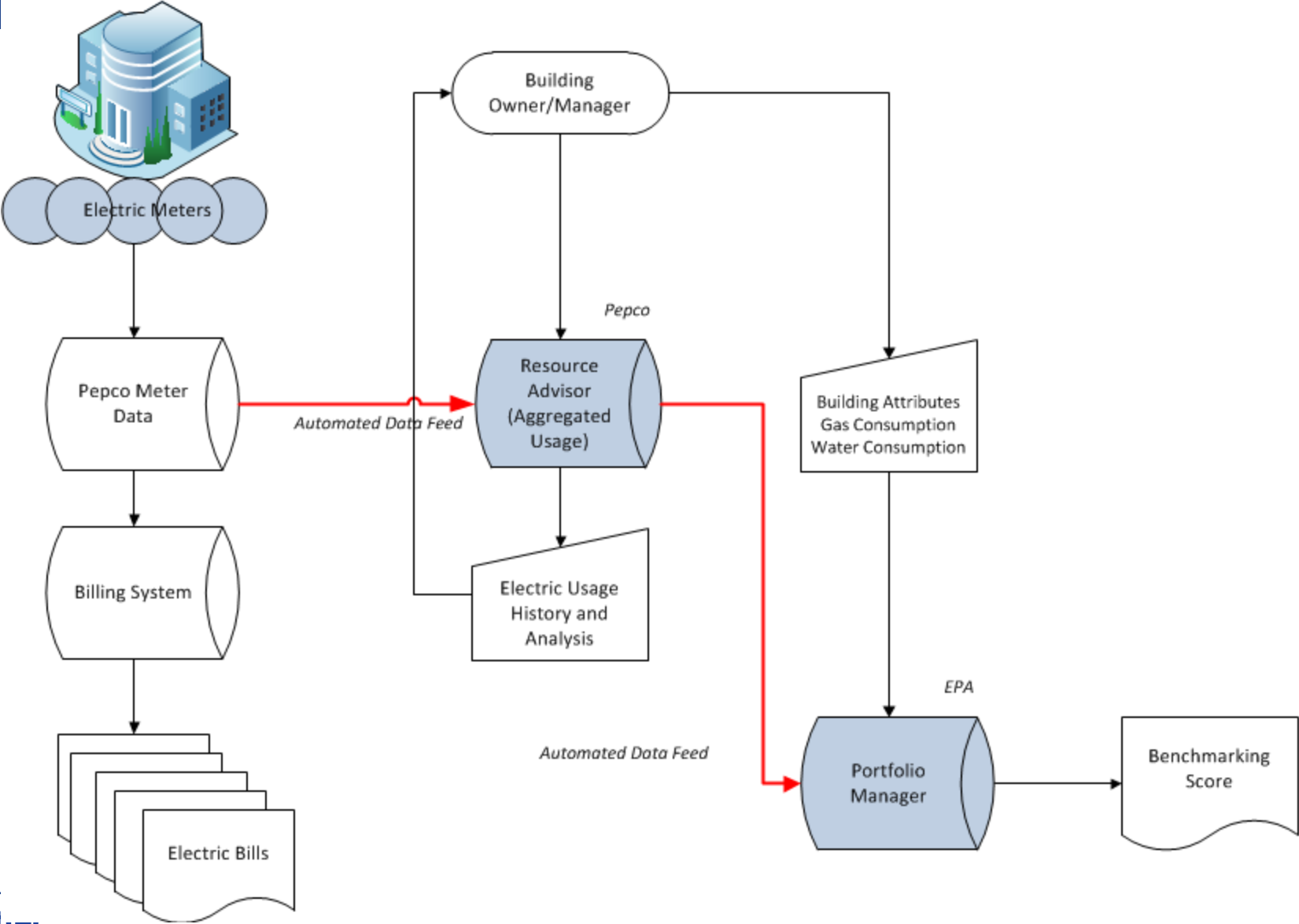
Thank You

Meeting Recap

- **Stakeholder Engagement Session**
  - Main Points Discussed
  - Focus Moving Forward
- **Policy and Regulatory Session**
  - Main Points Discussed
  - Focus Moving Forward
- **Technical Session**
  - Main Points Discussed
  - Focus Moving Forward

Timeline

Partner Milestones

Commit to the Accelerator	**Convene local stakeholders**	**Design solution for providing whole-building data to multi-tenant buildings**	**Pilot solution for 20% of relevant buildings**

June 2013 – Dec 2013 → **Dec 2013 – May 2014** → **1 Year** → **2 Years**

Participated in Partner Assessments

Provided Partner Work Plans

White House Launch of the Accelerator

Deliver Draft Reporting Template

Providing Draft Convening Docs

End of Y1 Convening to Share Designs

Participation in Working Groups – contributing to resources, webinars, conference calls

Next Steps

- Meeting Follow-Up (Partners and DOE Team)
- May: Final Stakeholder Convening Documents (Partners)
- June: Distribute Final Reporting Template (DOE Team)
- October/November: Submit Draft Reporting Template (Partners)
- December: Submit Final Reporting Template (Partners)
- December: Next EDA Meeting
- Ongoing
  - Continue engaging stakeholders
  - Working group activities
  - Assistance as needed

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http://www1.eere.energy.gov/buildings/betterbuildings/accelerators/energy.html

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