SEED: Standard Energy Efficiency Data Platform

2014 Building Technologies Office Peer Review

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

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Project Summary

Timeline:

Start date: 2013

Planned end date: Sept 30, 2014

Key Milestones

1. v1.0 launch; April 2014
2. Adoption by 2-3 cities; May 2014
3. v1.1 launch; July 2014

Budget:

Total DOE $ to date: $1,400,000

Total future DOE $: TBD, depends on market adoption

Target Market/Audience:

organizations that manage and publish building energy data: City disclosure ordinances, portfolio managers, energy efficiency program managers, etc.

Key Partners:

Building Energy	
Institute for Market Transformation	

Project Goal:

SEED is designed to help State and local governments implement building performance reporting regulations for private and/or public buildings

Purpose and Objectives

Problem Statement: Many organizations have a similar need to manage, analyze, and publish data on the energy performance of groups of buildings, in order to track progress toward overall energy goals

Target Market and Audience: Target audience is organizations that manage and publish building energy data: City disclosure ordinances, portfolio managers, energy efficiency program managers, etc.

Planned Contribution to Energy Efficiency:

1. SEED is developing an open-source software system to help manage building energy performance data
2. Market Impact:
    a. Near-term: adoption of SEED by pilot cities implementing municipal disclosure ordinances
    b. Intermediate-term: Adoption of SEED by other users; Development of a SEED Community to support development
    c. Long-term: SEED is standard tool for managing building energy performance data

Value of SEED

- **Provides a free, open source platform to clean, manage and store data from multiple sources about the same buildings, and share it with selected external parties**
- Reduces upfront cost of storing and managing data in a private, secure way
- Addresses workflow management and relieves administrative burden
- Data cleansing process increases data quality and saves staff time
- Common platform and data format increases consistency and permits collaboration between jurisdictions
- Consistent, vendor neutral, objective
- Facilitates sharing of data and applications
- Open and extensible architecture supports development of third-party applications and reduces needs for internal IT support
  - Idea is to allow third-parties to provide much of the analysis and visualization

- **But these tactical values serve a bigger goal for the market – to make data and systems interoperable**

The Standard Energy Efficiency Data Platform

SEED is designed to help State and local governments implement building performance reporting regulations for private and/or public buildings

In the future it could be used by large portfolio owners, energy efficiency programs, and energy efficiency service providers.

San Francisco

New York City

Washington D.C.

Austin

Philadelphia

Seattle

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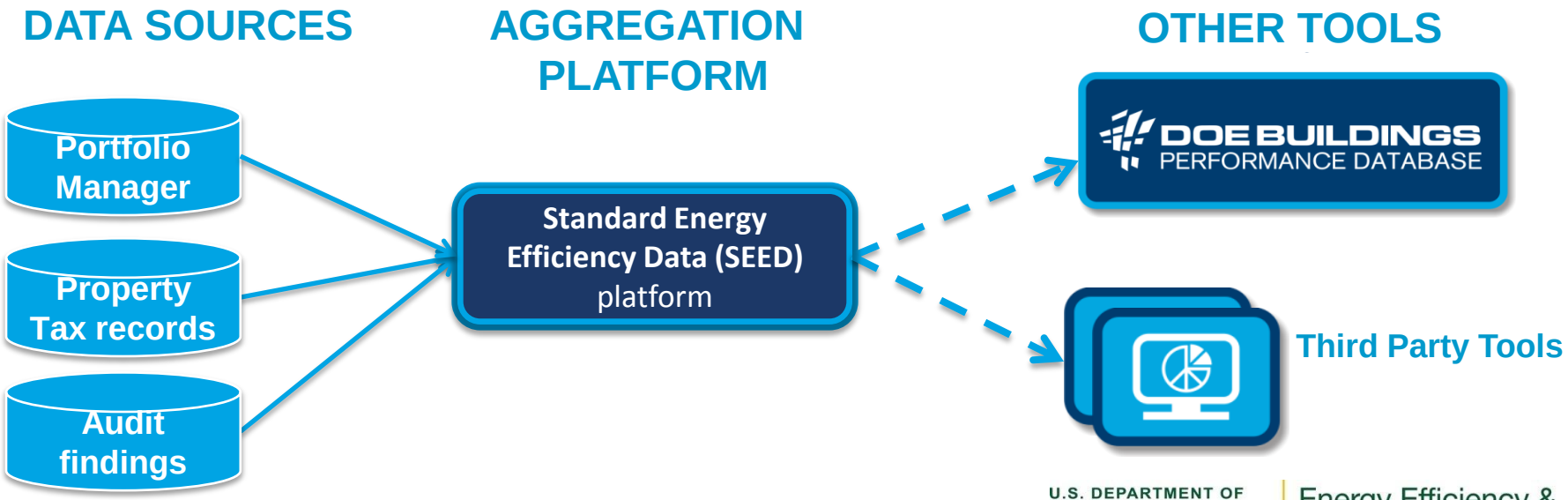
Approach: How the SEED Platform works

- The SEED platform enables users to **import data from multiple sources** about a group of buildings, and **conduct analysis and reporting** of the information
- SEED is a blank database; each user has their own private copy
- SEED uses a standard data format – Building Energy Data Exchange Specification (BEDES)
- The owner of each SEED instance can choose which external parties can access their information, and what records and fields to share
- An application programming interface (API) will enable third-parties to access the data, and offer add-on tools and services, in a replicable way



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SEED v1.0 – Available Now

Data importing and merging

- Allow map/clean/merge (MCM) tax assessor data and import into SEED
- Upload and MCM a spreadsheet export of Portfolio Manager data (custom report integration)

Data editing, matching and updating

- Help users to reconcile and match records from different sources
- View/edit all data for given building and/or for select periods of time
- View which records do and do not meet a minimum set of compliance checks
- Change compliance status based on PM and city data completeness
- Label and group records

Data reporting and exporting

- Ability to export data in various formats

Platform Architecture

- Host on local servers or cloud
- Open-source software

SEED v1.1 – Summer 2014

Data importing and merging

- Support for importing datasets via API, XML, excel and .csv
- Ability to add new data fields and define their format

Data editing, matching and updating

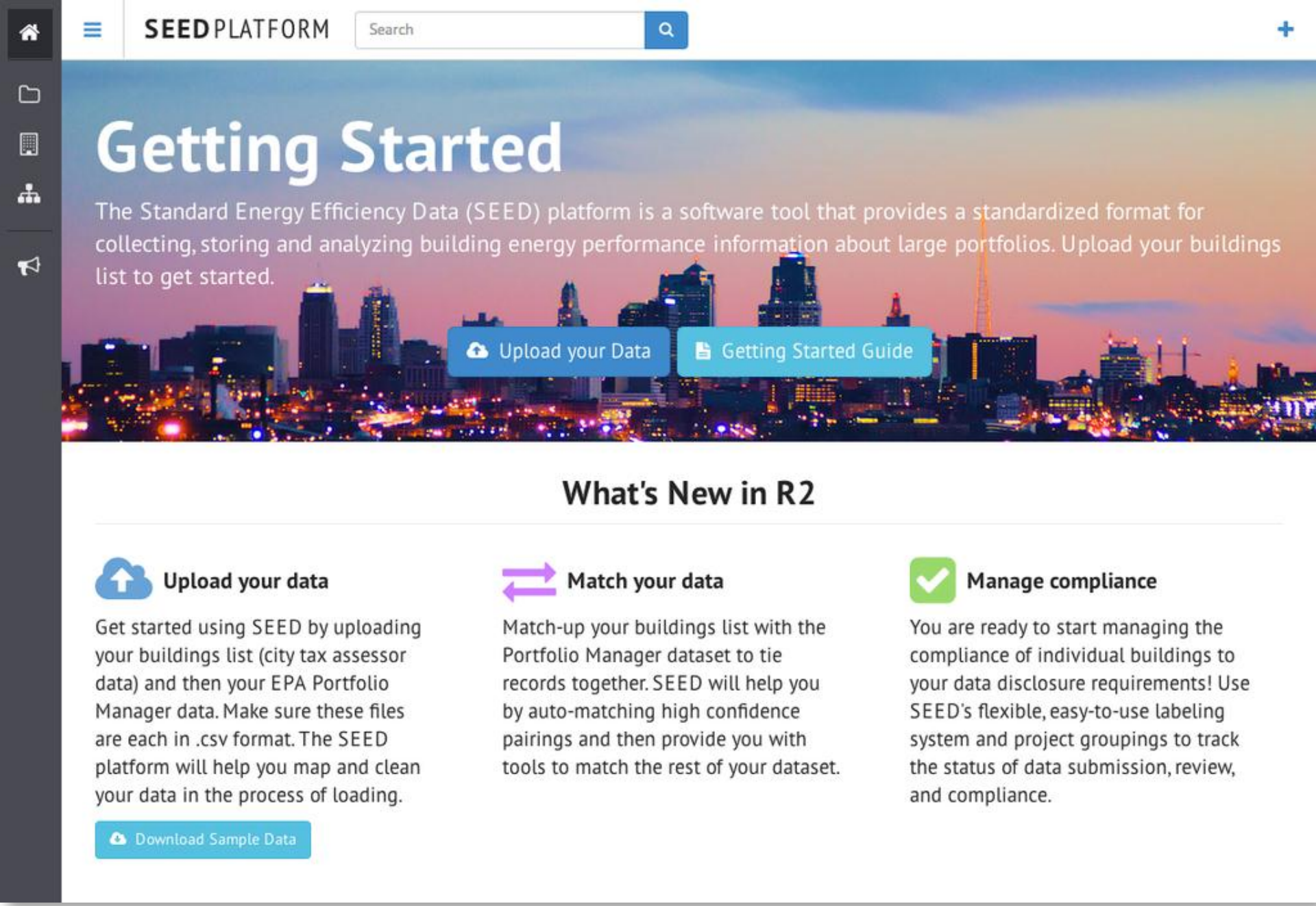
- Audit trail to show history of data edits
- Ability to add comments and annotations on individual records

Data reporting and exporting

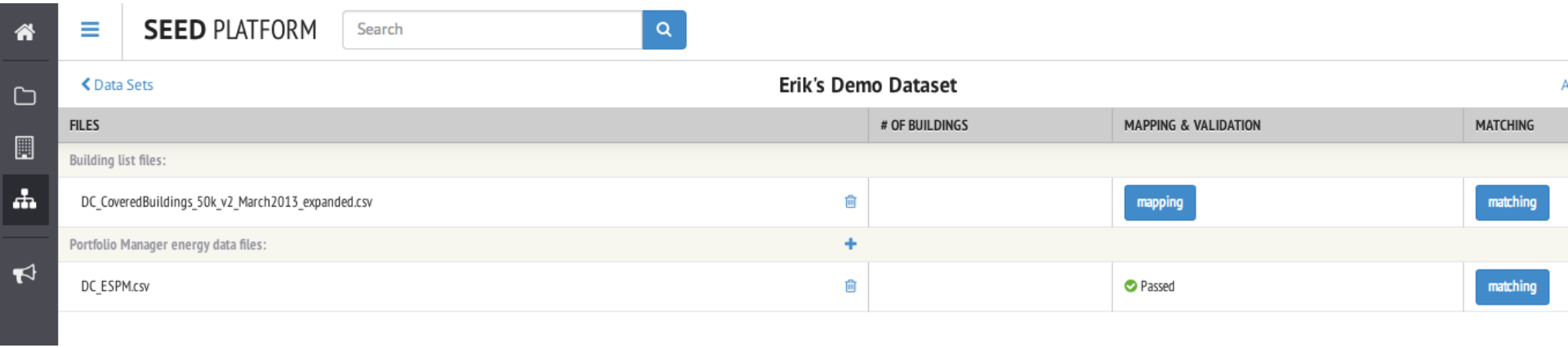
- Define fields and records that can be viewed publicly or by authorized parties
- Ability to export data in various formats, including via the API

Platform Architecture

- Improved error reporting, help screens & documentation
- One-click export to Buildings Performance Database
- API for publishing data to third-parties and the public
- Plug-in framework for third-party software extensions
- Multiple levels of user access and control

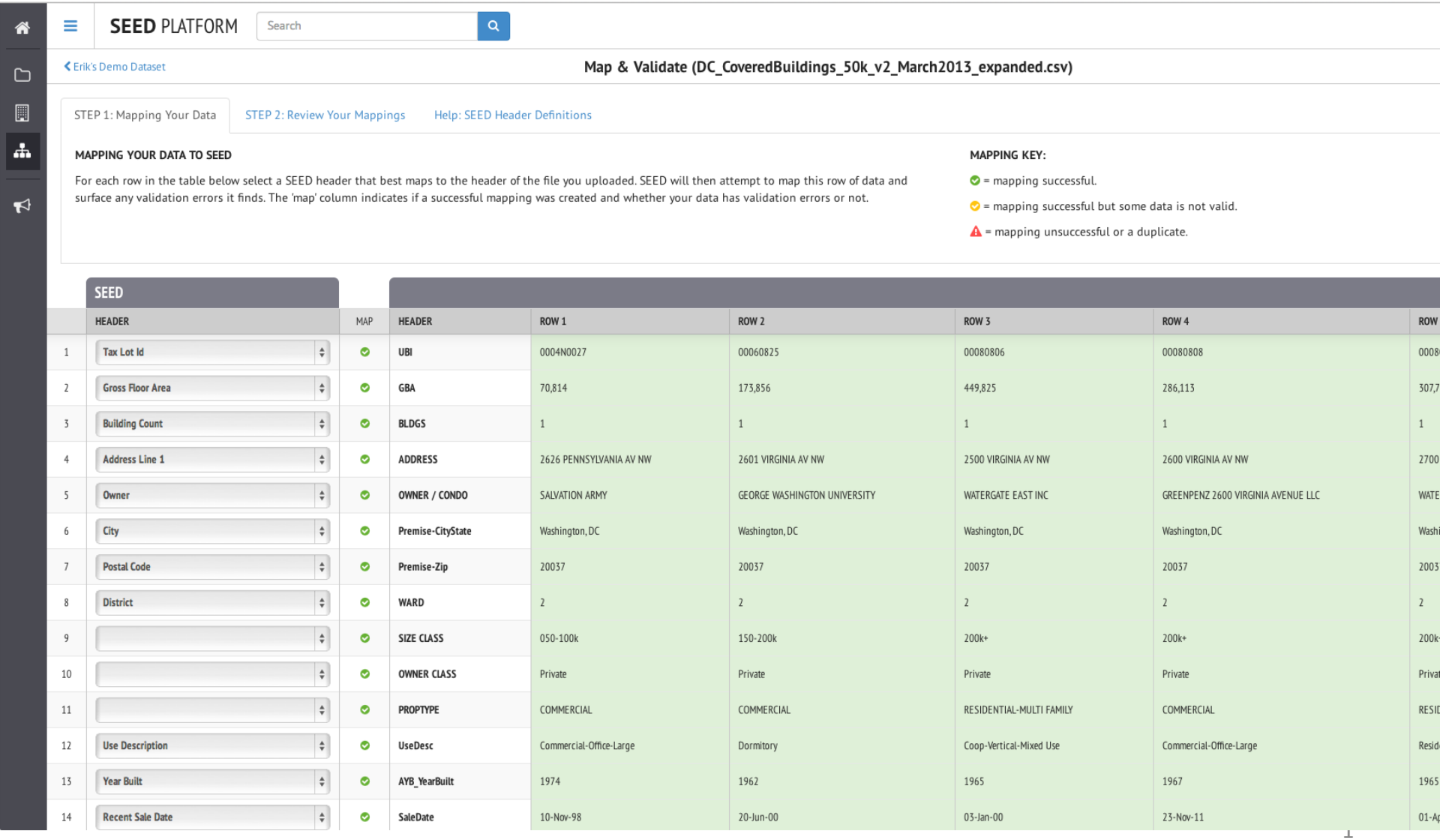

SEED PLATFORM
Search
Getting Started
The Standard Energy Efficiency Data (SEED) platform is a software tool that provides a standardized format for collecting, storing and analyzing building energy performance information about large portfolios. Upload your buildings list to get started.
Upload your Data
Getting Started Guide
What's New in R2
Upload your data
Get started using SEED by uploading your buildings list (city tax assessor data) and then your EPA Portfolio Manager data. Make sure these files are each in .csv format. The SEED platform will help you map and clean your data in the process of loading.
Download Sample Data
Match your data
Match-up your buildings list with the Portfolio Manager dataset to tie records together. SEED will help you by auto-matching high confidence pairings and then provide you with tools to match the rest of your dataset.
Manage compliance
You are ready to start managing the compliance of individual buildings to your data disclosure requirements! Use SEED's flexible, easy-to-use labeling system and project groupings to track the status of data submission, review, and compliance.

View Imported Datasets



Map a dataset into the standard format

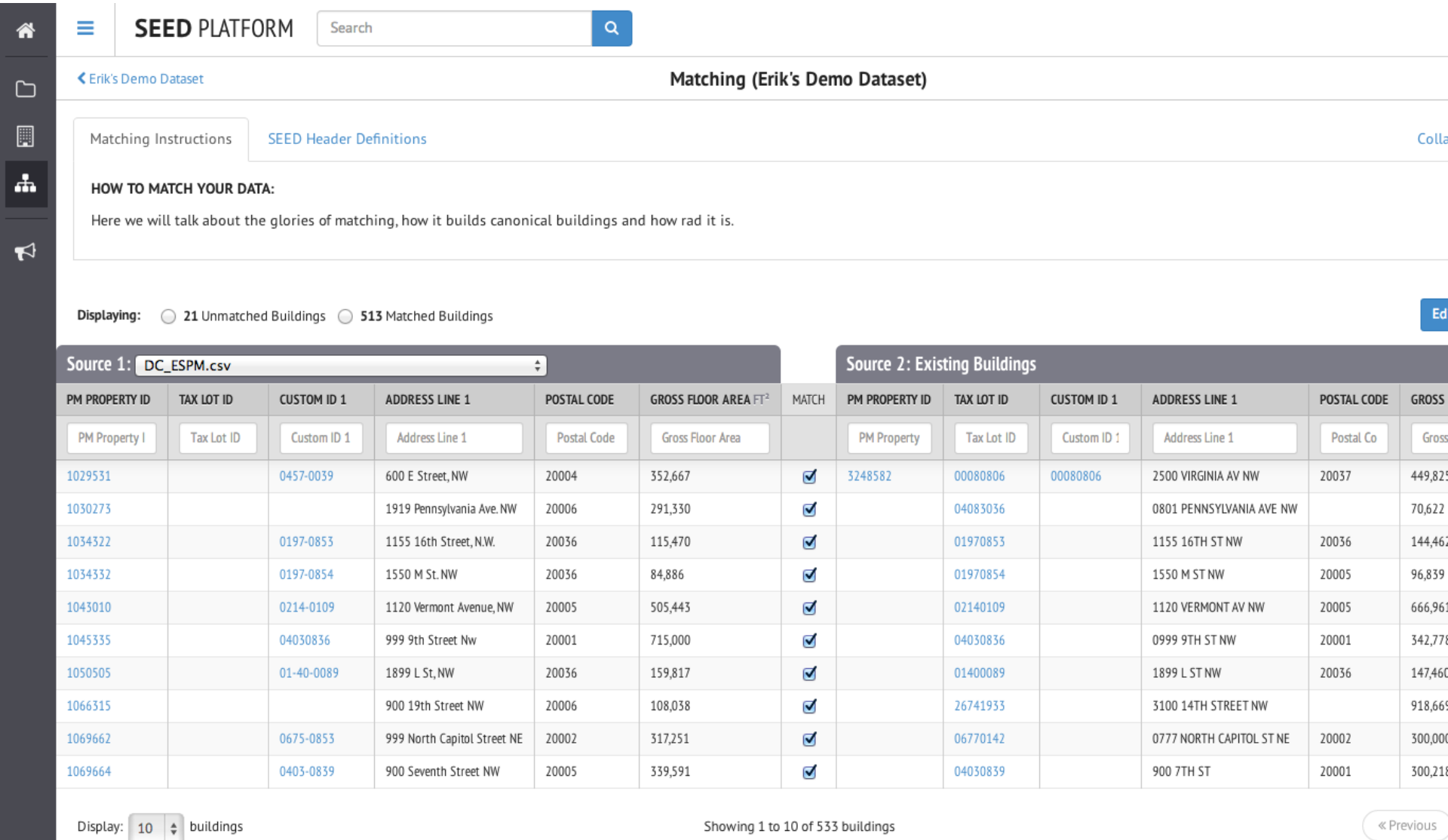
SEED matches similar field names and provides an interface to make/confirm matches. SEED then remembers your decisions for future imports.



	SEED HEADER	MAP	HEADER	ROW 1	ROW 2	ROW 3	ROW 4	ROW
1	Tax Lot Id	✓	UBI	0004N0027	00060825	00080806	00080808	0008
2	Gross Floor Area	✓	GBA	70,814	173,856	449,825	286,113	307,7
3	Building Count	✓	BLDGS	1	1	1	1	1
4	Address Line 1	✓	ADDRESS	2626 PENNSYLVANIA AV NW	2601 VIRGINIA AV NW	2500 VIRGINIA AV NW	2600 VIRGINIA AV NW	2700
5	Owner	✓	OWNER / CONDO	SALVATION ARMY	GEORGE WASHINGTON UNIVERSITY	WATERGATE EAST INC	GREENPENZ 2600 VIRGINIA AVENUE LLC	WATE
6	City	✓	Premise-CityState	Washington, DC	Washington, DC	Washington, DC	Washington, DC	Washi
7	Postal Code	✓	Premise-Zip	20037	20037	20037	20037	2003
8	District	✓	WARD	2	2	2	2	2
9		✓	SIZE CLASS	050-100k	150-200k	200k+	200k+	200k
10		✓	OWNER CLASS	Private	Private	Private	Private	Privat
11		✓	PROPTYPE	COMMERCIAL	COMMERCIAL	RESIDENTIAL-MULTI FAMILY	COMMERCIAL	RESID
12	Use Description	✓	UseDesc	Commercial-Office-Large	Dormitory	Coop-Vertical-Mixed Use	Commercial-Office-Large	Resid
13	Year Built	✓	AYB_YearBuilt	1974	1962	1965	1967	1965
14	Recent Sale Date	✓	SaleDate	10-Nov-98	20-Jun-00	03-Jan-00	23-Nov-11	01-Ap

Match records from multiple datasets

SEED does a similar process for helping match records from different source datasets.



Progress and Accomplishments

Discoveries: Cities implementing disclosure ordinances have the most difficulty simply aggregating and managing data they receive from building owners

Accomplishments:

- Competitive solicitation published and software developer selected
- Intensive user engagement program conducted, with in-depth interviews and focus groups
- SEED v1.0 available both as a hosted service and open-source package

Project Contribution to Energy Efficiency : The purpose of benchmarking and disclosure requirements is to give owners and occupants the information they need to understand their building's relative energy performance, and help identify opportunities to cut energy waste. SEED makes it easier to implement these laws.

1. SEED has been carefully designed to meet the needs of these agencies
2. SEED team is working closely with initial adopters to ensure a good experience in using the software

Awards/Recognition: None

Project Integration and Collaboration

Project Integration: The SEED development team has been in regular contact with potential users to understand their needs and translate that into software requirements

Partners, Subcontractors, and Collaborators:

- Software developer: Building Energy
- User outreach and engagement: Institute for Market Transformation

Communications:

- monthly conference calls with user community
- in-depth interviews of potential users
- focus groups with potential plug-in developers and API users

Next Steps and Future Plans

Next Steps and Future Plans:

- Provide technical assistance to early users to speed adoption
- Continue development of software to add full feature set in v1.1, expected July 2014
- Support further adoption by new types of users:
  - DOE State Energy Program grantee reporting
  - AIA 2030
  - State of California, other state and local governments
- Ensure SEED is used for any BTO projects that are collecting energy performance data from large groups of buildings
- DOE to continue supporting development if enough market adoption
- Develop business plan to eventually transition SEED to an open-source "SEED Community" that will manage ongoing development

REFERENCE SLIDES

Project Budget

Project Budget:
FY13: $900,000
FY14: $300,000 original contract. $200,000 increase for additional software features to SEED v1 and LBNL oversight and open source management.
Variances: Additional software features were identified through stakeholder interactions. Increase in LBNL oversight and rollout and open source management added to change in scope and cost.
Cost to Date: $499,274 or 35.7% of total $1,400,000 budget
Additional Funding: None

Budget History

October 1, 2013– FY2013 (past)		FY2014 (current)		FY2015 – (planned)	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
$900,000	0	$500,000	0	TBD	

SEED Project Plan and Schedule

The project has four tasks, corresponding to four project objectives:
Task 1 Complete development of a production-grade version 1 of SEED and release it to the market.
Task 2 Complete development of a production-grade version 1.2 of SEED and release it to the market.
Task 3 Provide technical support for users and third party developers and assist DOE with promotion.
Task 4 Maintain and support the SEED open-source software project, including the source code repository.