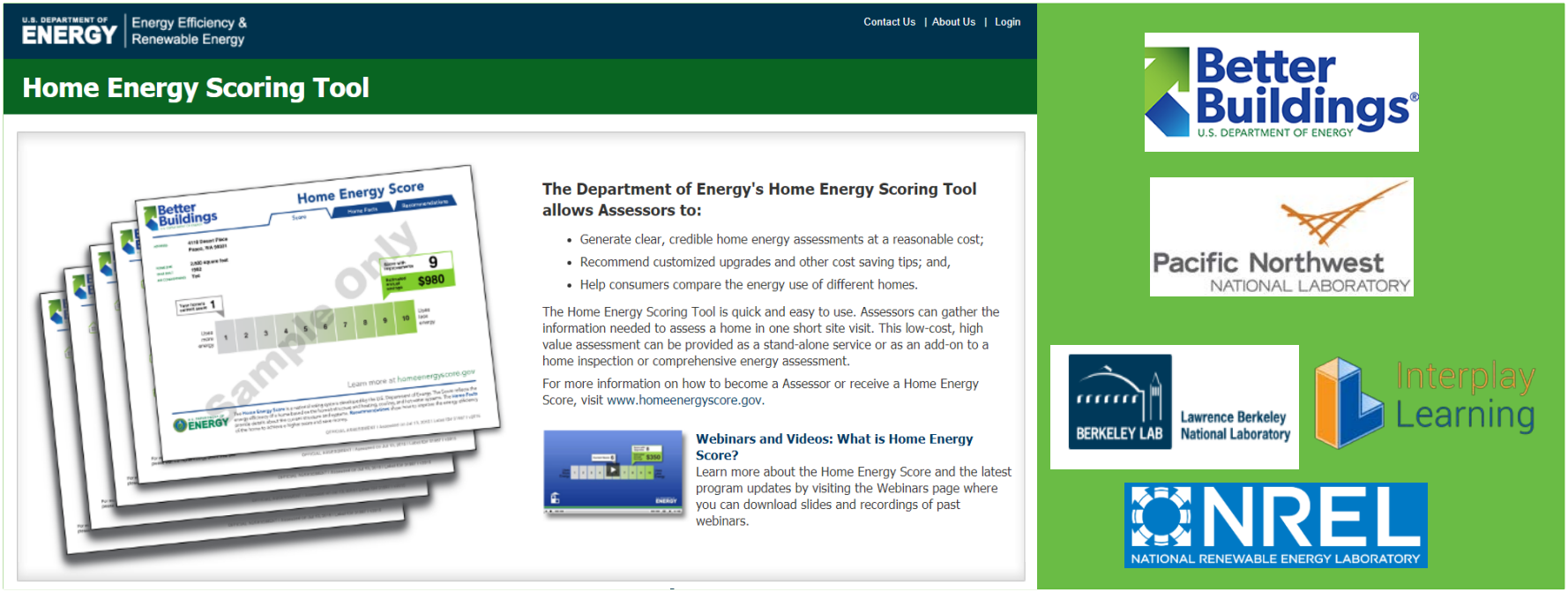
U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Home Energy Score Gateway



Pacific Northwest National Laboratory

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Project Summary

Timeline:

Start date: 9/24/2014

Planned end date: 9/24/2021

Key Milestones

1. Joint Modeling & Admin Gateway: 2/12/2017
2. Streamlined training & processes: 9/30/2018
3. Integration of new OS/E+ models: 9/30/2020
4. Streamlining & Transition to NGO: 9/30/2021

Budget:

Total Project $ to Date:

- DOE: $2.04M (2014 – current)
- Cost Share: N/A

Total Project $:

- DOE: $3.30M (2014 – 2021)
- Cost Share: N/A

Key Partners:

DOE Office of Energy Efficiency and Renewable Energy (EERE)
Lawrence Berkeley National Laboratory (LBNL)
National Renewable Energy Laboratory (NREL)
Interplay Learning

Project Outcome:

A 'gateway' to Home Energy Scoring capabilities that provides:

- Web-based tools to enable DOE to manage partner engagement, assessor training, program reporting, and quality assurance activities
- Web-based interfaces to provide partners and assessors initial access to Home Energy Scoring capabilities
- API's for third-party software providers to apply DOE-certified residential energy scoring models

Team

DOE EERE:

- Program administration
- Partner and stakeholder communication
- Energy scoring policy and strategy subject matter experts

PNNL:

- Seamless integration of energy modeling and program administration services
- Systems software engineering and web-based delivery subject matter experts

LBNL:

- Residential energy scoring modeling codes (DOE2)
- Residential building science subject matter experts

NREL:

- Residential energy score modeling codes (Open Studio / Energy Plus)
- Building data transfer protocol (HPXML) subject matter experts

Interplay Learning:

- Online training services
- 3-D training subject matter experts

Challenge

Problem Definition: The development of a DOE-provided model to perform energy scores for residential buildings is only one piece of an end-to-end solution that can be applied by the general EERE community.

To be effectively applied by the larger community, additional tools and processes must be developed (and operationally supported) that enable:

- ***DOE*** to administer the operation application of the models by government and private partners. Includes identifying and managing partners (and partner-specific score labels), orchestration of training and authorizing assessors, and support of quality assurance and reporting activities.

- ***Partners*** to identify ***assessors***, support residential assessments, and share energy-related information with home owners and 'data registrar' that ultimately deliver residential energy information to multiple listing services and other commercial entities.

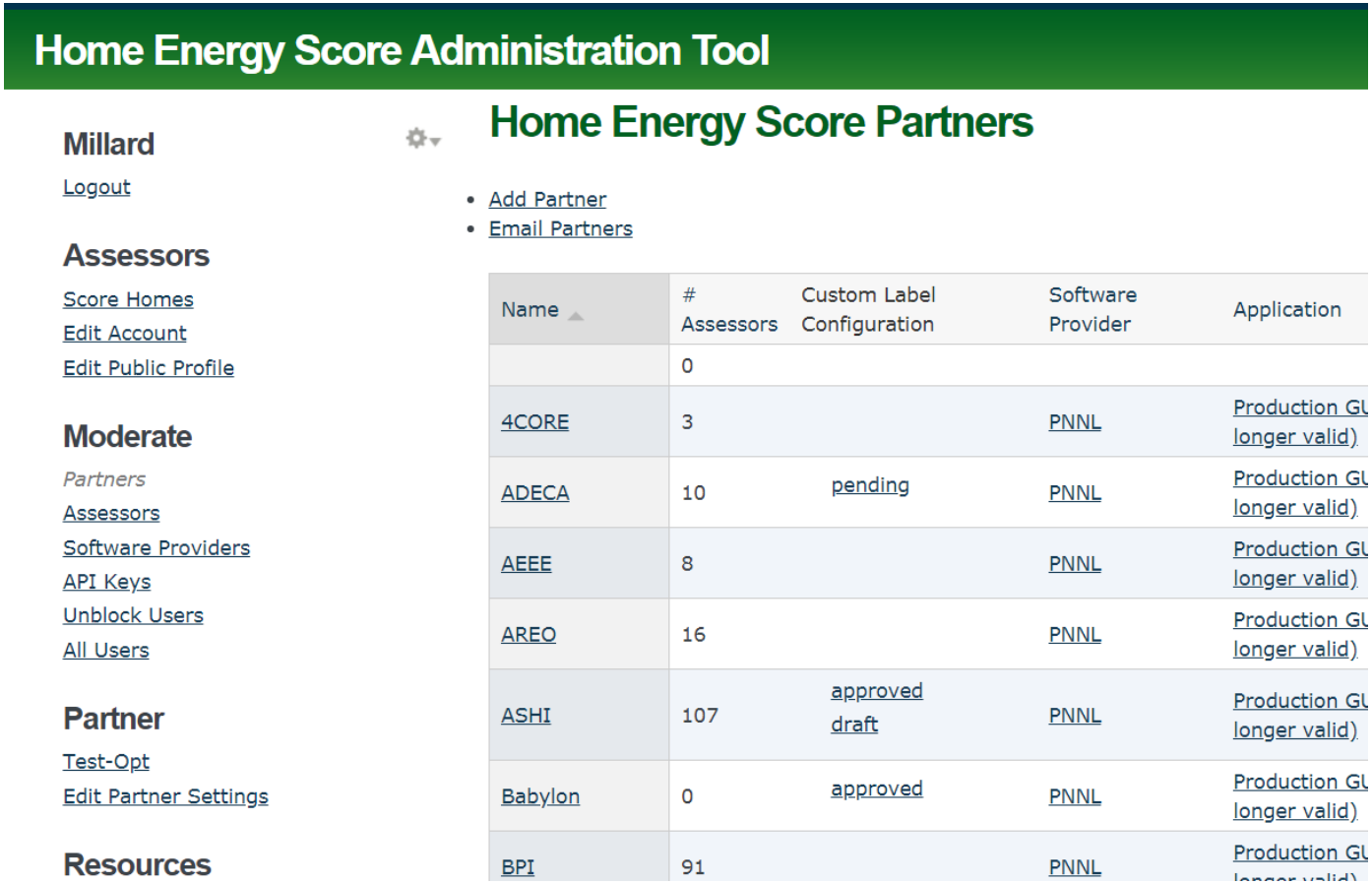
- ***DOE*** to offer 'free' entry-level residential scoring tools that allow local organizations to begin applying Home Energy Scoring tools without a significant investment, engaging communities in the process, before requiring investments in commercial value-added products.

- ***Third-party software providers*** to apply Home Energy Score models as part of their value-added offerings. Organizations have a choice of DOE or commercial services.

Approach

Home Energy Score Gateway: Administration

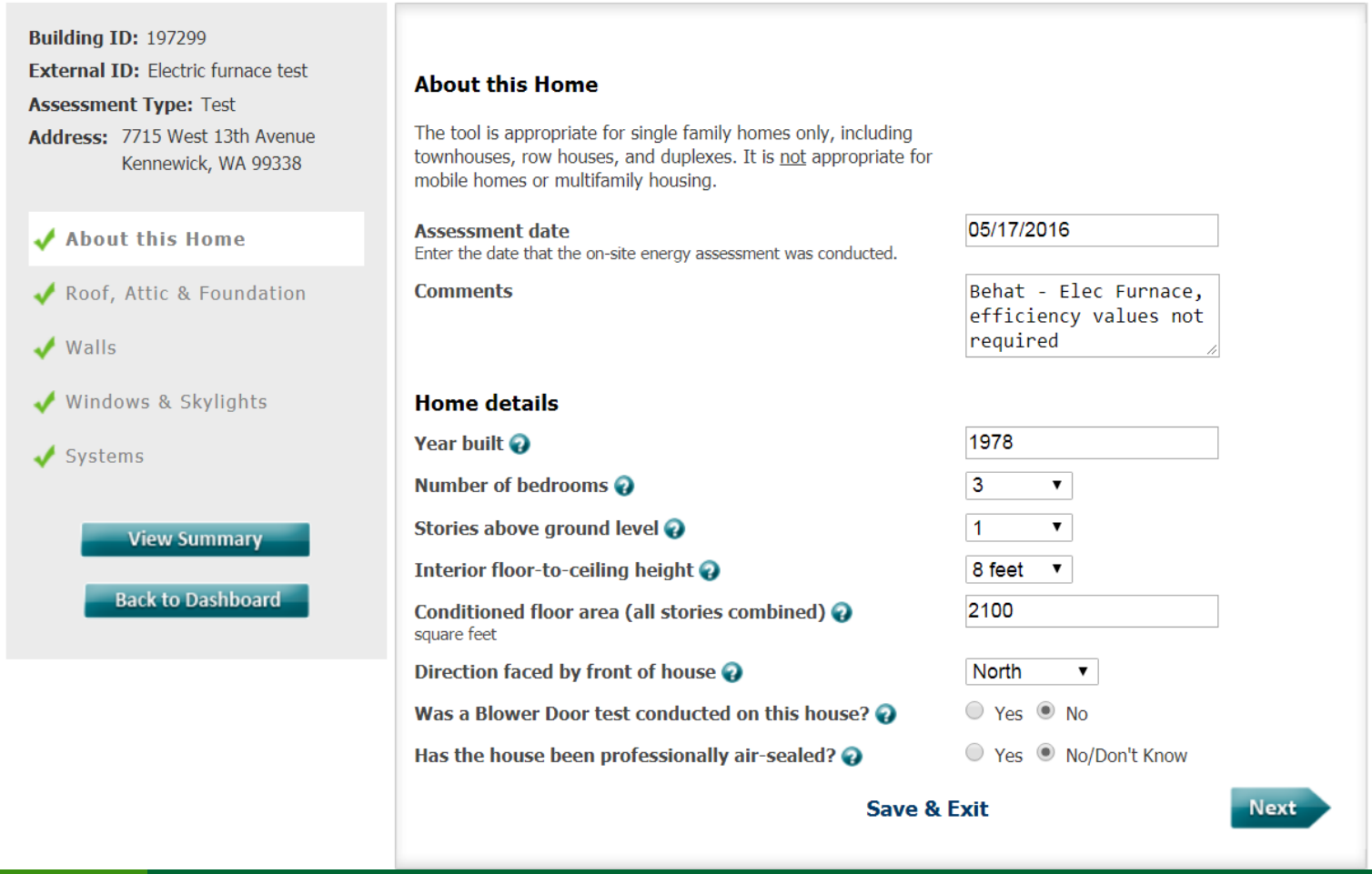
- Provides a web-based tool (and processes) for DOE to administer partners, assessors, software providers, quality assurance, and reporting activities in support of DOE's Home Energy Score Better Buildings effort



Approach

Home Energy Score Gateway: Execution

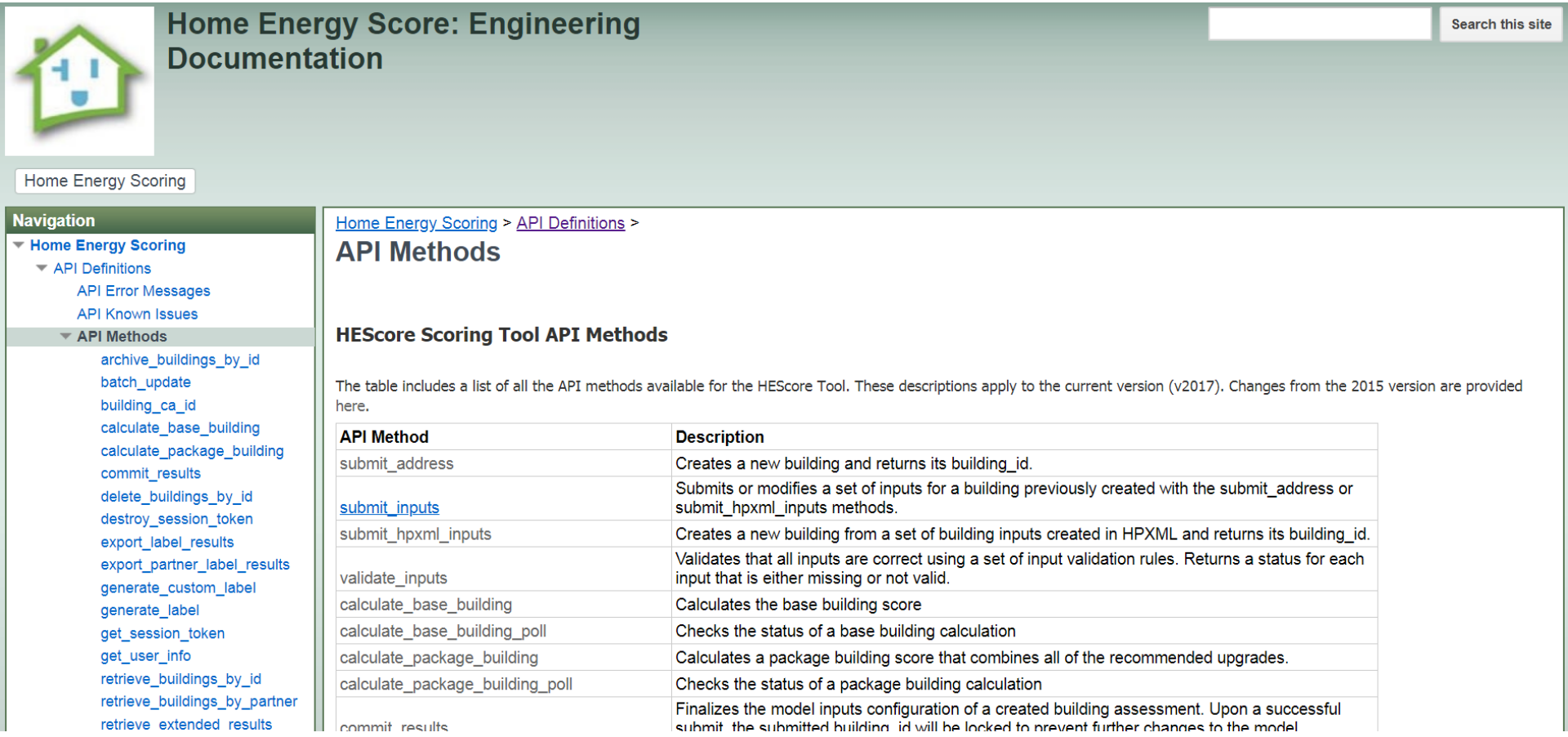
- Provides a focal point for partners and assessors to become involved in the effort
- Provides entry-level tools and processes



Approach

Home Energy Score Gateway: Transition to Commercial Entities

- Provides a single, DOE-certified method for scoring homes that can be applied by third-party, value-added providers



Approach

Home Energy Score Gateway: Transition to Commercial Entities

- Transition to data registers and downstream commercial consumers, including multiple listing services
- Will assist in collecting data for home performance with Energy Star Program

Green Building Registry

The CITY OF PORTLAND Oregon

City Home | Government | Bureaus & Offices of the City of Portland

Planning and Sustainability

Innovation. Collaboration. Practical Solutions.

energy

ENERGY STAR

HOME ENERGY LABELING INFORMATION EXCHANGE (HELIX)

Impact

Home Energy Score Stakeholders…

- 31 states have at least 1 qualified assessor
- 26 active Home Energy Score Partners
- 670+ active assessors
- 89,000+ official scores have been generated

Value-added Providers

- 12+ software providers using the API
  - 6 are creating Scores
  - 3 of these are extracting data only
  - 5 are in developing their offerings, still need to go through DOE product review

Downstream consumers

- Transition to Green Building Register mandated 2015, to be completed in 2018
- Use mandated by the City of Portland, January 1, 2018
- HELIX data register, in testing stage using ‘developer’s sandbox’

Progress

- Late-stage development, baseline administration tools in place since 2016
- Mature Agile development method delivers high-quality, production-level products
  - Highest-priority features are delivered first
  - Incremental updates ensure real-world issues are addressed in a timely manner
  - End-to-end verification and validation is conducted for each new / updated feature
- Key accomplishments
  - Cyber security review and upgrades
  - API's ensure third-party software can only access to partner / assessor-specific data
  - Dashboards to administer training process flow and assessor tracking
- End-to-end integration of new modeling features
  - Direct evaporative cooling
  - Mini-split heat pump
  - Ability to describe a photovoltaic system
  - Assessment of 'preconstruction' homes
  - Window shading
  - Instantaneous water heaters
- New administration features in progress
  - Additional administration, quality assurance, and reporting features being added
  - Adding business rules and streamlining the home assessment process
  - Continued automation and streamlining of assessor training with Interplay

Stakeholder Engagement

- Mid / mature-level capabilities
- Transitioning from ‘scoring’ homes to transitioning residential data to downstream consumers
- Find-an-Assessor service for EERE and partners
- Assessor sign-up and tracking services for partners
- Working with government and commercial entities to provide data transfer services from DOE-provided Home Energy Score database to local data registers
- Addition of quality assurance, training mentor, and other role-based dashboards to provide additional end-to-end services

Remaining Project Work

- Supporting quality assurance and mentoring roles
- Continued refinement of assessment process business rules and their inclusion in both DOE-provided interfaces and APIs
- End-to-end integration of new modeling features
  - Interfaces and APIs
  - Reporting
  - Documentation
- End-to-end integration of new residential modeling tools
  - Replace DOE2 with OS/E+ residential model components
  - Integration with SEED
- Potential to transfer administration services to other DOE programs
  - Currently assist in collecting home performance with Energy Star data
  - Could cost effectively (re)apply administration tools to provide HPwES system

Thank You

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