



NASCSP 2021 Winter Conference

National Renewable Energy Laboratory
March 8–12, 2021

Chuck Kurnik
Senior Engineer



We Need Your Help

- Standard Work Specifications (SWS): Help us improve
- Installer Badges Toolkit: Download at <https://sws.nrel.gov/installerbadges>
- Underutilized technologies: Have you implemented any?
- Grantee trainings: Recruiting subject matter experts and soliciting topic ideas
- Continuous Improvement Workshops: Recruiting participants
- Instructional Systems Design: A few seats available for trainers.

Questions? Email us anytime at workforce.guidelines@nrel.gov.

Weatherization Assistant

Scott Horowitz

Senior Research Engineer



Weatherization Assistant: NEAT and MHEA to the Web

Oak Ridge National Laboratory (ORNL) is migrating the **National Energy Audit Tool (NEAT)** and **Manufactured Home Energy Audit (MHEA)** to the web-based Weatherization Assistant.

- NEAT (for site built single-family homes) and MHEA (for mobile homes) are desktop software tools, last released in 2012.
- Multifamily Tool for Energy Audits (MulTEA) and Health and Safety Audit are already web-based tools, released in 2016-17.

The new web-based Weatherization Assistant will provide an improved/streamlined user experience and allow new capabilities.



Weatherization Assistant: Standardization and Interoperability

NREL and ORNL are developing an **HPXML data export** capability for the web-based Weatherization Assistant.

- Home Performance XML (HPXML)
- Standardized data transfer protocol adopted by many residential software developers
- Based on BPI data standards
- Industry working group leads development and direction.

HPXML facilitates communication and exchange of data on residential building descriptions and energy performance.

HPXML increases transparency.

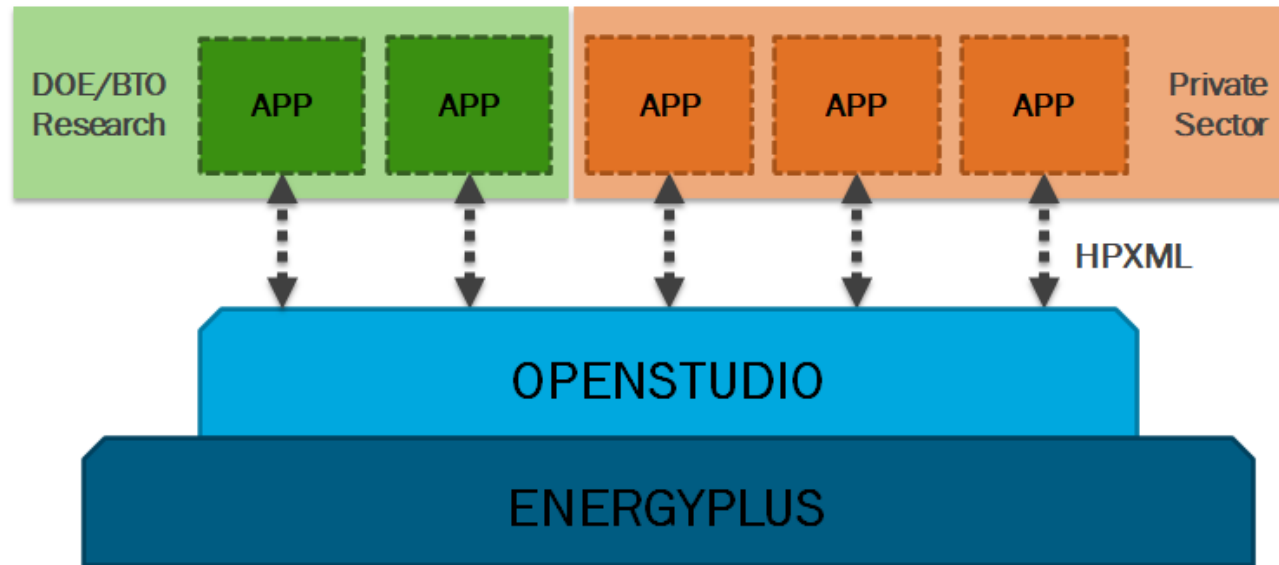


```
<HPXML xmlns="http://hpxmlonline.com/2019/10" schemaVersion="3.0">
  <Building>
    <BuildingID id="Bldg_38"/>
    <ProjectStatus>
      <EventType>audit</EventType>
    </ProjectStatus>
    <BuildingDetails>
      <BuildingSummary>
        <BuildingOccupancy>
          <NumberOfResidents>4</NumberOfResidents>
        </BuildingOccupancy>
        <BuildingConstruction>
          <ResidentialFacilityType>single-family detached</ResidentialFacilityType>
          <NumberOfConditionedFloors>1</NumberOfConditionedFloors>
          <NumberOfConditionedFloorsAboveGrade>1</NumberOfConditionedFloorsAboveGrade>
          <AverageCeilingHeight dataSource="software">8</AverageCeilingHeight>
          <NumberOfBedrooms dataSource="software">3</NumberOfBedrooms>
          <ConditionedFloorArea>1300</ConditionedFloorArea>
        </BuildingConstruction>
      </BuildingSummary>
      <ClimateandRiskZones>
        <WeatherStation>
          <SystemIdentifier id="weatherfile_name"/>
          <Name>STLOUIMO.WX</Name>
        </WeatherStation>
      </ClimateandRiskZones>
      <Enclosure>
        <AirInfiltration>
          <AirInfiltrationMeasurement>
            <SystemIdentifier id="AirInfiltrationMeasurement"/>
            <HousePressure>50</HousePressure>
            <BuildingAirLeakage>
              <UnitofMeasure>CFM</UnitofMeasure>
              <AirLeakage>4000</AirLeakage>
            </BuildingAirLeakage>
          </AirInfiltrationMeasurement>
        </AirInfiltration>
        <Walls>
          <Wall>
            <SystemIdentifier id="Wall_1">
              <SendingSystemIdentifierType>NEAT Code</SendingSystemIdentifierType>
              <SendingSystemIdentifierValue>WLL-N</SendingSystemIdentifierValue>
            </SystemIdentifier>
            <ExteriorAdjacentTo>outside</ExteriorAdjacentTo>
            <InteriorAdjacentTo>living space</InteriorAdjacentTo>
            <WallType>
              <WoodStud/>
            </WallType>
            <Area>400</Area>
            <Orientation>north</Orientation>
          </Wall>
        </Walls>
      </Enclosure>
    </BuildingDetails>
  </Building>
</HPXML>
```

Weatherization Assistant: Modernized Energy Simulation

NREL is connecting the web-based Weatherization Assistant to an **open-source residential building energy modeling (BEM) platform built on the Department of Energy's (DOE's) flagship EnergyPlus® hourly simulation engine.**

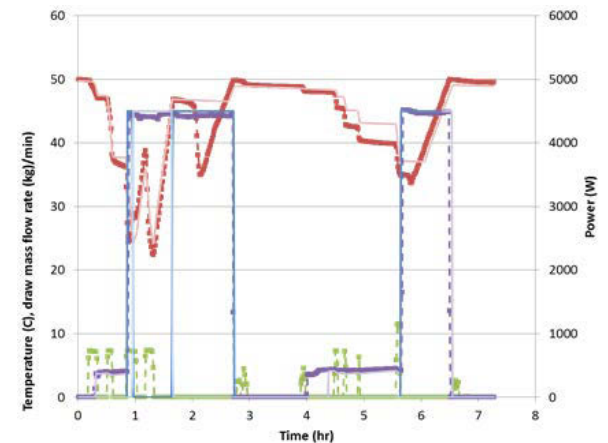
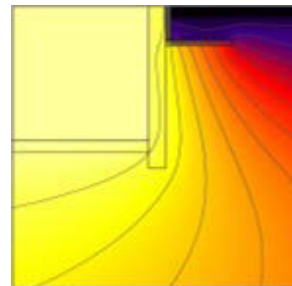
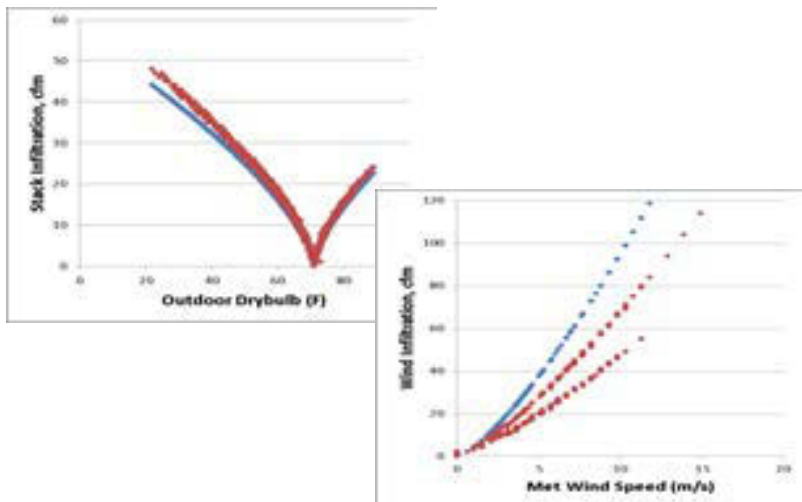
Capable
Transparent
Consistent
Fast
Easy to Use



Weatherization Assistant: Modernized Energy Simulation

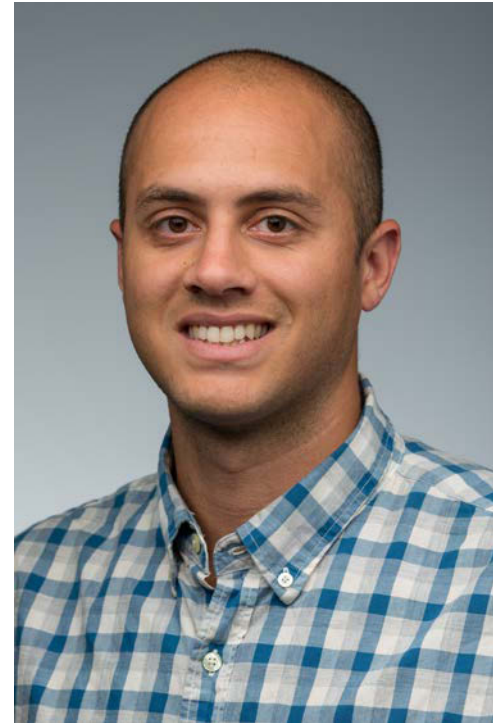
The EnergyPlus-based simulation platform offers many benefits:

- ✓ **Accelerates new building technologies/measures** into software tools
- ✓ **Increases alignment and consistency** across DOE/industry programs
- ✓ **Allows sharing modeling capabilities** with other DOE programs
- ✓ **Improves modeling accuracy** using state-of-the-art physics-based heat transfer algorithms
- ✓ **Leverages strong simulation engine development** by DOE spanning decades and validated by laboratory/field experiments.



SWS

Zac Peterson
Technical Project Manager



Background

- SWS represent **consent-based guidance developed in accordance with industry best practices** and intended to achieve higher-quality outcomes for home weatherization.
- **Periodically reviewed to capture current best practices** recommended by the community, as well as to promote consistency across the industry, including training centers.
- **SWS field guides are used to implement Weatherization Assistance Program (WAP)-funded work** that aligns with SWS content.

2020 SWS Is Live!

Standard Work Specifications

HOUSING TYPE ▾

Search

SEARCH



Health and Safety ▾

Air Sealing ▾

Insulation ▾

Heating and Cooling ▾

Ventilation ▾

Baseload ▾

Log in

Use the Standard Work Specifications (SWS) tool as an industry guide to ensure work performed during home energy upgrades is effective, durable, and safe. To view SWS 2017, please visit the [SWS 2017 legacy website](#).



Maintenance Cycle Status

- Year 1
- Year 2
- Year 3
- Year 4
- Year 5

Receiving public comments on current Standard Work Specifications.

Learn More:

[How SWS are maintained](#)

<https://sws.nrel.gov>

Help Us Improve the SWS!

- Seeking stakeholder feedback on:
 - Improving the field guide creation tool
 - Novel and innovative ways to maximize the value the SWS could provide to the WAP network and beyond.

Standard Work Specifications

HOUSING TYPE - Search SEARCH



Health and Safety v Air Sealing v Insulation v Heating and Cooling v Ventilation v Baseload v My Account v

Field Guides

CREATE NEW FIELD GUIDE

My Field Guides Community Field Guides

Name	SWS Version	Housing Type	Author	PDF	Edit
2020 SWS - Manufactured Housing - All Specifications	2020	Manufactured Housing	Zachary Peterson (NREL)	Download PDF	SELECT ACTION -
2020 SWS - Multifamily Housing - All Specifications	2020	Multifamily Housing	Zachary Peterson (NREL)	Download PDF	SELECT ACTION -
2020 SWS - Single Family Site-Built - All Specifications	2020	Single Family Site-Built Housing	Zachary Peterson (NREL)	Download PDF	SELECT ACTION -

Email if you are interested in providing feedback:
workforce.guidelines@nrel.gov.

DOE WAP Installer Badges Toolkit

Jal Desai
Research Engineer



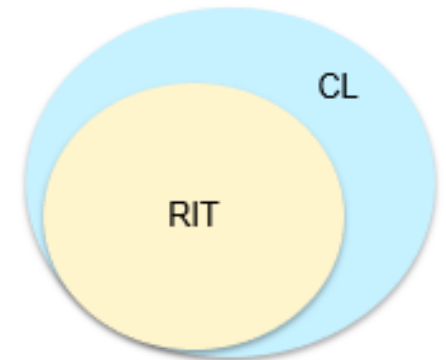
Background

- The Retrofit Installer Technician tasks became the basis of the installer badges.
- Designed with the intention of making adoption of the job task analyses (JTAs) and badges easier and more attractive to the entire home energy retrofit industry, including utility programs, private sector work, contractors, and more.
- The Badges Toolkit is available for free and can be downloaded by clicking on this link
<https://sws.nrel.gov/installerbadges>.

Original 2 JTAs:



2019 Update – One JTA



Installer Badges Toolkit

- The Badges Toolkit for home retrofits consists of 25 "badges."
- Each badge defines a task or measures an installer could perform on a home.
- The badges encourage greater flexibility in the training of installers by allowing them to focus only on those measures that are installed in their program or profession.

Work Lead-Safe.....	.....
Air Seal Attic Floor .....	.....
Seal and Dam High-Temperature Heat Sources in Attic.....	.....
Prep Attic Floor for Insulation.....	.....
Treat Attic Hatch .....	.....
Insulate Attic Floor and Pass Inspection First Time.....	.....
Insulate the Ceiling of a Manufactured Home.....	.....
Seal and Insulate Knee Walls .....	.....
Install Dense-Pack Sidewall Insulation .....	.....
Insulate the Walls of a Manufactured Home .....	.....
Install Weather Stripping and Sweep Set on Exterior Door .....	.....
Air Seal and Insulate Walls of a Conditioned Subspace (Basement or Crawlspace)..	.....
Air Seal Floor Above Unconditioned Subspace (Basement or Crawlspace) .....	.....
Insulate the Floor Above an Unconditioned Subspace (Site Built Single Family) .....	.....
Insulate the Belly of a Manufactured Home.....	.....
Install or Repair Vapor Retarder in a Subspace .....	.....
Vent Clothes Dryer to the Exterior.....	.....
Install Ducting for Bath or Kitchen Range Fan.....	.....
Air Seal Ducted Distribution System .....	.....
Insulate Ducted Distribution System.....	.....
Install Window or Exterior Door.....	.....
Repair/Replace Cracked or Broken Glass .....	.....
Insulate a Water Heater Tank and First Six Feet of Pipes.....	.....
Install Low-Flow Faucet Aerators or Showerhead.....	.....
Install Exterior Roof Penetration (e.g., roof vents or bath fan termination).....	.....

Installer Badges Toolkit

The Badges Toolkit includes five pieces:

- **"How to Use the Badges Toolkit"** provides a brief overview of how a Grantee, Subgrantee, or training provider may approach using the toolkit.
- The **"Badges Toolkit: Worksheet"** includes several questions an entity would consider when determining whether and how to best incorporate the badges into its weatherization assistance program.
- In the **"Crew Leader Job Task Analysis Spreadsheet,"** the badges align with the JTA, indicating which badges address which areas of the JTA.
- The **"RIT Badges Passport"** features separate pages for each badge, which include places for the installer and the supervisor/trainer to record the number of times a task has been successfully completed.
- The **"RIT Badges Verification Criteria"** include sample inspection checklists for each badge. These can be modified as needed based on approved variance requests or more stringent requirements. They also should provide a basis for consistent inspections and awarding of badges.

Updates

- The Badges Toolkit was updated in 2020 to add licensing and copyright agreements:
 - Users must cite the copyright information when using or distributing copies of the Badges Toolkit in any way.
 - The technical content has remained unchanged from previous versions of the Badges Toolkit.
- Aligned with updated SWS
- 200+ users have downloaded so far
- Two training centers and one grantee have already implemented the Badges Toolkit in their program.

Pilot Implementation of Commercially Underutilized Technologies in the WAP

Technologies

HVAC-Related:

1. Cold-Climate Air Source Heat Pumps (ccASHPs)
 - a. Central Split system
 - b. Mini-Split system
2. Aerosol-based sealant for ducts.

Envelope-Related:

1. Insulation and Air Sealing for Enclosed Cavity.

If you have had any experience with these technologies in your program, let us know at workforce.guidelines@nrel.gov.

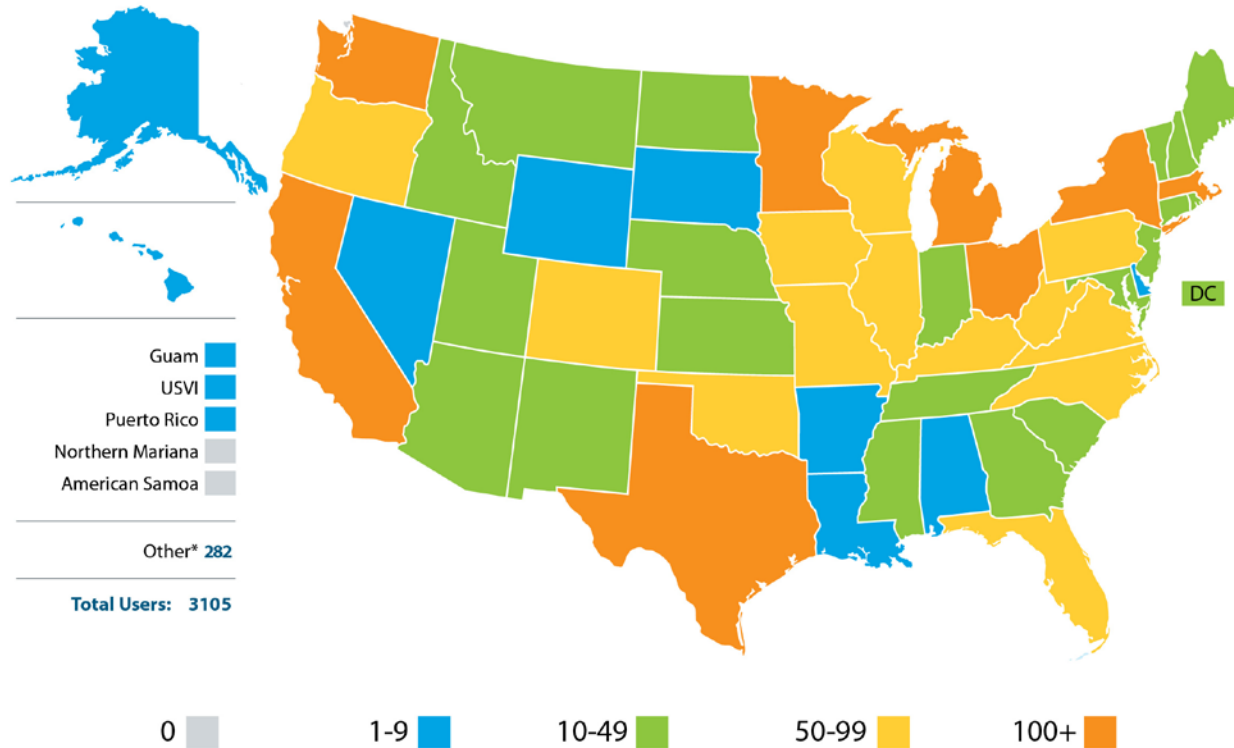
Grantee Training and Continuous Improvement

Juliana Williams

Energy Markets and Policy Specialist



Subgrantee Administrative Training



User Locations as of November 24, 2020.

- In 2020, over 3,200 users signed up and completed almost 20,000 online Subgrantee Administrative training courses at <https://wap.litmos.com>.
- Almost 900 users have completed the COVID-19 Workplace Safety Training.

Grantee Online Training

- In partnership with the Interstate Renewable Energy Council (IREC) and NASCSP, NREL is launching a project to develop online training for Grantees.
- We are currently recruiting Grantee Subject Matter Experts to provide input on content and execution of the trainings.

Grantee Training Practitioner Cohort Applications are due March 17: <https://sws.nrel.gov/grantee-training>.

If you have specific ideas for online trainings you would like to see, email weatherization.support@nrel.gov.

2021 Continuous Improvement Workshops

- DOE is continuing to engage with the WAP network on improving program implementation through virtual Continuous Improvement Workshops.
 - Workshop #1 (All Stakeholders): Thursday, April 29, 2021
 - Workshop #2 (Grantees): Tuesday, May 18, 2021
 - Workshop #3 (Subgrantees): Thursday, June 17, 2021.
- Topics include: how organization culture affects WAP implementation; ways to improve the Grantee Plan update process; ways for Subgrantees to assess their own success; and the use and accessibility of WAP resources.

Workshop Applications are due March 24:

[https://sws.nrel.gov/2021-continuous-improvement.](https://sws.nrel.gov/2021-continuous-improvement)

Instructional Systems Design (ISD) Training

Robin Burton
Research Analyst



ISD Training for WAP Background and Objectives

Background:

- ISD workshops offered to WAP Network in person in 2012, 2013, 2019
- Transitioned to online format for 2021.

Objectives:

- Provide professional development to WAP curriculum developers and instructors
- Train providers to update or modify curricula to more flexible formats.



Online Course Offering in 2021

- Six-week, instructor-led online course
- Developed for DOE in partnership with:
 - Simonson Management Services (SMS)
 - Interstate Renewable Energy Council (IREC).
- Two sessions:
 - Session 1: March 12-April 30
 - Session 2: Starts mid-June or early July
- Notification sent to WAP Trainers' Consortium; applications accepted Nov 9-25, 2020.
- Session 1 is full; a few seats for Session 2 may become available.

ISD Online Course Content

- A practical introduction to applying the ADDIE model of curriculum development:
 - Analysis, Design, Development, Implementation, and Evaluation.
- Instructors and participants will work together to:
 - Develop learning objectives
 - Design learner assessments based on objectives (e.g., test questions, rubrics)
 - Map out streamlined approaches to curriculum, whether in person or online.
- Time commitment is ~5-8 hours/week to:
 - Review online content
 - Complete assignments
 - Attend weekly course meetings.
- Attendees expected to bring content to improve or projects to develop.
- Certificates of completion provided to those who complete all course elements.



Thank you!

www.nrel.gov

NREL/PR-7A40-79466

This work was authored by the National Renewable Energy Laboratory, operated by Alliance for Sustainable Energy, LLC, for the U.S. Department of Energy (DOE) under Contract No. DE-AC36-08GO28308. Funding provided by U.S. Department of Energy Office of Energy Efficiency and Renewable Energy Weatherization and Intergovernmental Programs Office. The views expressed in the article do not necessarily represent the views of the DOE or the U.S. Government. The U.S. Government retains and the publisher, by accepting the article for publication, acknowledges that the U.S. Government retains a nonexclusive, paid-up, irrevocable, worldwide license to publish or reproduce the published form of this work, or allow others to do so, for U.S. Government purposes.

