

## Re-tuning Challenge Training for a Low-Cost Path to Energy Efficiency

The U.S. Department of Energy (DOE) Federal Energy Management Program (FEMP), with the support of Pacific Northwest National Laboratory (PNNL), launched the Re-tuning Challenge to provide agencies with a low-cost training and implementation opportunity.

Federal buildings account for nearly 60% of the energy used in the U.S. Re-tuning enables building managers to comply with requirements set by the Energy Independence and Security Act of 2007 (Section 432), the Energy Act of 2020, and Executive Order 14057.

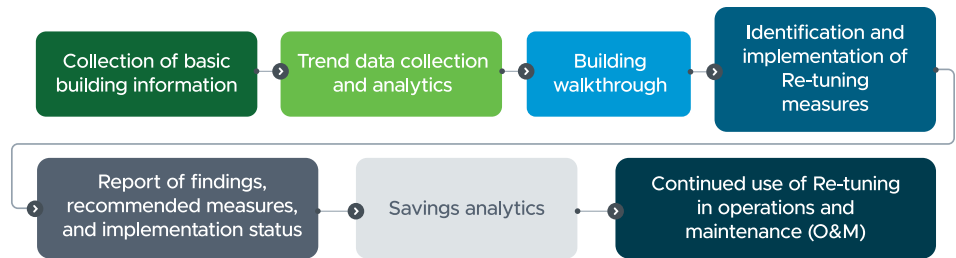
### Re-tuning produces annual energy savings ranging from 5% to 25% in federal sites

Re-tuning is a systematic process aimed at reducing building energy consumption by identifying and correcting operational problems that plague buildings. Typically, these problems can be resolved by applying no-cost or low-cost measures.

### The Re-tuning challenge empowers federal sites to implement Re-tuning principles across their portfolio

#### Re-tuning Benefits

- Effective no-cost/low-cost method for reducing energy and water usage, meeting decarbonization goals
- Supports compliance with current statutes (EISA 432, EA2020, EO14057)



Re-tuning relies on building automation system (BAS) data to identify and implement control improvements at no cost other than the time to program the changes.

- Identifies savings opportunities primarily through the building automation system (BAS)
- Typical annual savings range from 5 – 25% with simple payback of 0.3 – 3.5 years
- Improves occupant comfort, through correction of faults and making airside systems responsive to specific zone demands
- Identifies O&M issues
- Extends equipment life, through correct operations and sequencing
- Contributing approach to agency's Energy Management Program (50001 Ready)

#### Activity 1. FEMP Team Re-tuning Site Visit

##### Re-tuning controls experts from the FEMP Team will visit the site for a 2.5-day re-tuning

- Identification of controls improvement measures geared toward energy savings.
- Modeling in the Building Re-tuning Simulator (BRS) – a no-cost web-based tool to estimate energy, cost, and CO<sub>2</sub> emissions savings from implementing Re-tuning measures.
- Engagement with site staff in discussing and selecting measures for implementation
- Discussion of follow-up implementation efforts, possibly to be conducted by a local controls vendor.
- Coordination of ongoing support needs from FEMP.
- Detailed report outlining the Re-tuning and O&M measures identified during the site visit with Measurement and Verification (M&V) of savings after implementation.

#### Activity 2. Re-tuning Training

- 2-day regional training session scheduled concurrently with the FEMP Team site visit.
- Classroom presentations, group activities, and field demonstrations of re-tuning principles
- Applicant agency should send representatives to the re-tuning training that will be involved in the internal re-tuning effort.

#### Activity 3. Internal Re-tuning Effort

- Trained agency representative will perform a re-tuning assessment at other buildings within the agency as needed, including:
  1. Building selection
  2. Data collection
  3. Measure formulation
  4. Measure implementation
  5. M&V
- Train others in the organization on Re-tuning concepts
- Limited remote technical support available from the FEMP team.

#### Learn More About Applying for a Re-tuning Challenge Training Session

FEMP provides Re-tuning training for site staff and guidance for Re-tuning of one building to selected federal sites. If you are interested in hosting a Re-tuning Challenge at your site, visit <https://www.energy.gov/femp/re-tuning-challenge> or contact the Retuning Challenge team at [fempre-tuning@hq.doe.gov](mailto:fempre-tuning@hq.doe.gov).

## Re-tuning Challenge Case Studies

The Re-tuning Challenge launched in 2019 and FEMP has provided 6 no-cost regional trainings and related support on agency sites.

### Training Highlights

Site	Alfred Arraj Courthouse	Redstone Arsenal (RSA)	Forest Products Laboratory (FPL)
Agency	GSA	DoD	USDA
Location	Denver, CO	Huntsville, AL	Madison, WI
Date	2019	2023	2023
Building Type	Courthouse	Education Facility	Laboratory Building
Building Size	290,000 ft <sup>2</sup>	50,000 ft <sup>2</sup>	90,000 ft <sup>2</sup>
Re-tuning Measures	15	8	15
Measure Implementation Status	4 Fully Implemented 3 Partially Implemented 8 Recommended/Planned	Implementation ongoing	Implementation ongoing
Project Benefits	18% energy savings 29% reduction in emissions (kg CO <sub>2</sub> e) 41% reduction in energy use based on BRS full implementation predictions	28% reduction in energy use based on BRS predictions 23% reduction in emissions (kg CO <sub>2</sub> e) based on BRS predictions	19% reduction in energy use based on BRS predictions 19% reduction in emissions (kg CO <sub>2</sub> e) based on BRS predictions
FEMP Assistance	<ul style="list-style-type: none"> <li>• Facilitated by PNNL personnel.</li> <li>• Developed O&amp;M improvement measures and energy-saving control measures (vetted with site staff).</li> <li>• Performed building walkthroughs, reviewed the BAS, and discussed existing control strategies, scheduling, and building history with O&amp;M staff.</li> <li>• Technical report of energy consumption analysis and O&amp;M and Re-tuning measures.</li> </ul>		

### Additional Re-tuning Resources

Re-tuning in Federal Buildings: [energy.gov/femp/re-tuning-federal-buildings](https://energy.gov/femp/re-tuning-federal-buildings)

Screening a Building for Re-tuning Potential: [energy.gov/femp/screening-building-re-tuning-potential](https://energy.gov/femp/screening-building-re-tuning-potential)

Re-tuning Training for Buildings With Building Automation Systems: [wbdg.org/continuing-education/femp-courses/femp66](https://wbdg.org/continuing-education/femp-courses/femp66)

Re-tuning Training for Buildings Without Building Automation Systems: [wbdg.org/continuing-education/femp-courses/femp67](https://wbdg.org/continuing-education/femp-courses/femp67)

FEMP's Building Re-tuning Simulator: [retuning-simulator.pnnl.gov/](https://retuning-simulator.pnnl.gov/)



For more information, visit: [energy.gov/femp](https://energy.gov/femp)

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