

NATIONAL ENERGY EFFICIENCY REGISTRY (NEER) ROADMAP

Abstract

The NEER is a web-based platform that will help states document energy efficiency achievements to help meet their energy and environmental goals. Serving as a means to register and track energy savings and, as desired, enabling trading of instruments representing energy savings (and related environmental attributes), the NEER can support both voluntary energy efficiency initiatives and compliance with mandatory energy savings goals. This Roadmap provides an overview of major opportunities for applying NEER across states generally and for NEER Project Team states based on each state's circumstances. The Roadmap is meant to illuminate paths that states can consider for adopting NEER as a tool to support state energy objectives. (State-specific sections of the Roadmap will be provided as separate documents.)

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Disclaimer

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NEER Project Team and Acknowledgments

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Project Team State-Specific Sections Will Be Provided as Separate Documents

NEER Roadmap

Introduction

This Roadmap provides an overview of major opportunities for applying NEER across states generally and for NEER Project Team states¹ based on each state's circumstances. The Roadmap is meant to illuminate paths that states can consider for adopting NEER as a tool to support state energy objectives.

The common portion of this Roadmap outlines:

- NEER overview and purpose,
- Potential applications of the NEER and their potential implementation pathways,
- General guidance for developing state Specific Compliance/Certification Program (SCCP) criteria, i.e., requirements specified by states for energy efficiency to be registered and counted under their programs, and
- Conclusions.

Accompanying state-specific sections of the Roadmap were developed to focus on individual state contexts. State Project Team members consulted with sister agencies and other stakeholders over the course of the project and during the Roadmap development phase. Among state specific stakeholder engagements during the Roadmap development phase were a NEER Webinar for Michigan Stakeholders (March 21, 2017), an Oregon NEER Roadmap Workshop that included representation from Idaho, Montana, and Washington (Salem, OR, August 15, 2017), and a Pennsylvania NEER Roadmap Workshop (Harrisburg, PA, August 25, 2017); the in-person workshops also included remote participation via webinar. States also pursued informal interagency and stakeholder meetings.

The Roadmap process posed various questions concerning state-specific policies, programs, and other contexts to help identify NEER opportunities within each Project Team state; discern which opportunities may be more promising or less attractive, including options for complementing or supplementing existing or prospective programs (such as existing investor-owned, cooperative, and public power utility energy efficiency programs); and providing high-level paths for potential implementation. Among the questions posed:

- Utility related:
 - Are there energy efficiency resource standards (EERSs) or similar electric or natural gas utility targets or requirements? For investor-owned utilities? For cooperative and public power utilities?
 - Are there utility (investor-owned, cooperative, and public power) energy efficiency programs even if no EERS or similar requirement is in place?
 - Are there "self-direct" provisions for large commercial and industrial utility customers to perform energy efficiency and demand-side management (DSM) projects in lieu of participation in utility ratepayer-funded programs?
 - Are there or could there be opportunities for regulated utilities and distribution companies to trade energy savings credits to meet their energy efficiency/DSM obligations? Could there be the prospect for third-parties to earn and offer energy savings credits for sale to regulated entities?

¹ The NEER Project Team states include Georgia, Michigan, Minnesota, Oregon, Pennsylvania, and Tennessee.

- Is there electric utility integrated resource planning (IRP) or similar processes that can or are required to include energy efficiency and demand-side resources, whether for investor-owned or for cooperative and public power utilities?
- State and public facilities:
 - Are there state, local, or public facility energy efficiency or similar requirements or targets? For new construction? For existing facilities?
 - Are there any state-, local-, or other public-sector energy savings performance contracting (ESPC) programs?
- Air quality and emissions:
 - Are there existing or projected nonattainment areas for current or new National Ambient Air Quality Standards?
 - Is the state required to reduce annual emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) per the Cross States Air Pollution Rule?
 - Are there Regional Haze Program planning requirements in the state?
 - Are there state or local level greenhouse gas emission reduction targets or requirements (or related goals under a state or local climate action plan)?
- Energy efficiency finance program impact assessment:
 - Are there clean energy, sustainability, and energy efficiency finance programs (such as property assessed clean energy [PACE] finance, energy efficiency loan funds, and green banks) where there is a requirement or desire to document the energy savings and/or derivative benefits (such as avoided pollutants) of supported projects?
- Corporate interest in voluntary tracking of energy efficiency, air quality, and/or greenhouse gas emissions metrics:
 - Are there any major corporate entities and business associations interested in voluntarily tracking energy efficiency, air quality, and/or greenhouse gas emissions impacts associated with company activities and operations?
 - Are such companies interested in promoting energy efficiency in their supply chains and/or communities as part of their sustainability or corporate social responsibility objectives?

State level roadmapping requires more careful consideration of state-specific opportunities and options for use of NEER and its potential implementation. Some possible NEER implementation pathways can be performed under a state's current legal and regulatory environment, while others may require legislative, regulatory, or other policy evolution. Roadmapping requires more detailed examination of pertinent state processes, policies, requirements, and objectives relating to air quality, energy, and environmental stewardship.

This Roadmap was developed as a collaboration of Project Team states with NASEO and TCR. The purpose of this Roadmap is to illuminate NEER application and implementation options so as to incite continued engagement in Project Team states and beyond for enhancing the validation, quantification, and tracking of energy efficiency in order to advance state energy, economic, and environmental objectives.

NEER Overview and Purpose

The following is derived from the NEER Frequently Asked Questions (April 2017) document developed by TCR (<https://www.theclimateregistry.org/wp-content/uploads/2014/12/NEER-FAQs.pdf>).

What is the National Energy Efficiency Registry (NEER)?

NEER is a web-based platform that will help states document achievement of energy and environmental goals, disclose regulated entities' compliance activities, and drive voluntary investment in energy efficiency and energy and water conservation initiatives, by supporting the registration and tracking of energy efficiency projects and issuing tradable instruments based on resulting savings.

Who is developing NEER?

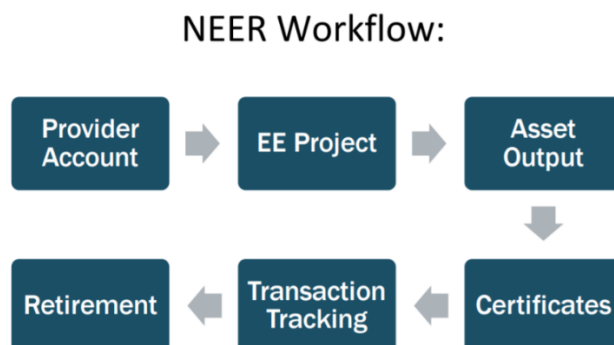
In 2015, Tennessee, Georgia, Michigan, Minnesota, Oregon, Pennsylvania, TCR, and NASEO, along with supporting organizations E4TheFuture and APX, were awarded competitive funding from the U.S. Department of Energy (DOE) to develop a roadmap for NEER. As part of NEER's development, this Project Team additionally recruited and engaged a broad stakeholder group of over 150 individuals representing 115 state and federal government agencies, non-profits, energy sector actors, academic institutions, consultants, and local governments.

How will NEER work?

NEER will provide a consistent framework for collecting and tracking information input by energy efficiency and other conservation project providers so that data will be collected and displayed in a standardized manner. When registering their projects, providers will indicate the voluntary or mandatory reporting standard with which they seek to comply. NEER is pre-populated with two options for voluntary reporting. States (or other program designers) can also create customized modules to meet any desired parameters.

Once projects are registered, they will undergo an eligibility evaluation in accordance with the selected reporting standard. After a project is proven to be eligible, the provider can begin to report on the project's impacts. If a project reports to a standard that supports the issuance of tradable certificates, the project's impacts (or asset output) will form the basis of those certificates. Any trading of certificates will be managed outside of NEER and then be tracked within it. Certificate transfers to and from other platforms will also be possible. Finally, NEER will support permanent retirement of certificates for substantiating voluntary or compliance claims.

Figure 1. NEER Workflow



How can states use NEER to drive energy efficiency investments?

NEER will put energy efficiency on a level playing field with other strategies that states can employ to achieve energy and environmental goals by providing a consistent, robust framework for energy efficiency to be included as an “eligible resource” in federal and state programs. NEER will demonstrate the eligibility and verification of avoided energy use according to established standards, address potential double counting issues, and enable “apples-to-apples” comparisons of project impacts. Types of initiatives that NEER will be able to support include energy efficiency resource standards, utility customer self-direct programs, state and local lead-by-example programs and standards, and air quality planning and management, including interstate air pollution trading programs such as U.S. EPA’s Cross-State Air Pollution Rule. More information about how NEER can support these programs follows in this Roadmap and can also be found in the [NEER User Scenarios](#).

How will NEER support voluntary energy efficiency objectives?

NEER will make it easier for organizations to document energy efficiency initiatives for improving economic competitiveness, environmental quality, and meeting voluntary energy and environmental targets. NEER’s consistent vetting of data reporting and quality assurance/quality control (QA/QC) procedures, including M&V, will provide sufficient transparency and credibility to support the issuance of certificates to supply a voluntary market and assure stakeholders that claimed savings from purchased certificates are real and not double counted. It will also support the development of new policies for privately-funded energy efficiency by providing transparency and credibility for projects implemented by energy service companies (ESCOs) and other non-utility-ratepayer-funded programs. This will expand the policy options for states seeking innovative approaches to incentivize local energy efficiency projects and support job creation.

How will NEER work with existing platforms?

NEER is being designed to be compatible with most existing environmental attribute reporting and trading platforms. Data will be able to be transferred between existing systems, thus avoiding duplication of effort or functionality.

How will NEER impact the cost of administering energy efficiency programs?

NEER will lower the costs associated with administering energy efficiency programs and policies by streamlining and automating processes that might otherwise be completed manually. This will free up more resources to identify and implement new projects.

How can NEER inform state policies?

NEER will bring transparency and clarity to the impacts of implemented energy efficiency programs which today are projected, estimated, reported, and audited using a wide range of approaches. This will enable broad and deep analysis of the impacts of existing energy efficiency programs, and help to identify new opportunities for energy savings. As a national platform, NEER will encourage the sharing of best practices, enable peer-learning, and elevate collaboration within and across states.

In addition, by providing states with key insight on avoided energy savings from non-utility-ratepayer-funded energy efficiency projects and potentially consolidating these with ratepayer-

funded savings in a single consistent format, NEER can help inform state energy and environmental planning efforts. Resiliency planning, electric reliability projections, and utility integrated resource planning are a few areas that stand to benefit from NEER.

Potential NEER Applications

As alluded to above and in the NEER User Scenarios cited, there are multiple potential applications for NEER, where vetting, registration, and possible issuance and trading of certificates, instruments, or credits representing energy savings (or derived benefits, such as avoided air emissions) can support state, local, and private energy and related objectives.

NEER offers a platform for qualifying and crediting energy savings (and derived benefits, such as avoided pollutant emissions) as meeting criteria established by programs and policies. Registered energy savings can be used, and potentially traded, to meet program objectives, such as showing achievement of required or targeted energy savings, recognizing energy efficiency as a demand-side energy “resource” for electric grid or energy assurance planning, demonstrating energy savings contributions to avoided pollutant emissions (conventional regulated emissions as well as state-, local- and privately-targeted greenhouse gas emissions), and showing efficacy or cost-effectiveness of energy efficiency or clean energy financing programs. Other applications are also possible and some of those listed here can overlap.

The following sections elaborate on several potential applications.

Utility sector related:

NEER may provide value in several electric and in some cases, natural gas utility programs and processes.

EERS and related standards and targets: Various states have or are considering EERSs or similar standards or targets (which can include renewable portfolio standards [RPSs] that include energy efficiency). EERSs typically require electric and/or natural gas utilities or distribution companies to achieve certain levels of energy savings supported by evaluation, measurement and verification (EM&V) activities. Many state EERS and similar targets are applicable only to investor-owned utilities under public utility commission (PUC)² jurisdiction, though there are exceptions. For example, Minnesota’s Conservation Improvement Program applies to investor- and customer-owned (co-operative and municipal) utilities and is overseen by the Department of Commerce (the State Energy Office). In most states with EERSs, energy efficiency programs are managed by the utility (or distribution company) or by a contracted program administrator. However, in several states, state-wide or multi-utility program administrators manage energy efficiency programs (e.g., Energy Trust of Oregon, Efficiency Vermont, Focus on Energy [Wisconsin]).

States with established EERSs or related standards could use NEER for registering, tracking, and, as allowed, trading energy savings. However, states already using well-established systems for tracking and crediting utility program associated energy savings may be less interested in adopting NEER if their existing systems meet all program needs.

² In this Roadmap “PUC” is also meant to refer to similar utility regulatory bodies with other names, such as Public Service Commissions or Corporation Commissions.

There are, however, several opportunities where NEER could be attractive for states with EERSs or related requirements. These include:

- **States with new or refurbished programs:** States without well-established utility energy efficiency programs or that are refurbishing or reorganizing their programs may find it easier to use the NEER platform than to develop a new vetting, tracking, and crediting process. It could also potentially facilitate interstate trading of EERS credits (as is sometimes done with renewable energy credits [RECs] under an alternative energy or renewable portfolio standard) which could be attractive for utilities that operate in multiple states.
- **Self-direct programs:** In some states, large commercial and industrial utility customers can opt to withhold fees targeted for utility energy efficiency programs (this can happen in both EERS and non-EERS states) from their utility bills and allocate such sums for their own “self-directed” energy efficiency efforts. The implementation and efficacy of self-direct energy efficiency projects are unevenly tracked and documented.³ NEER could support quantification, tracking, and crediting of self-direct program energy savings.
- **Third-party energy savings:** Generally, utility ratepayer-funded energy efficiency programs are delivered by utilities (or distribution companies) or their contractors or state-designated program administrators (e.g., Energy Trust of Oregon). If the scope of energy savings providers could be expanded, the opportunity may arise to achieve more cost-effective energy savings and/or to achieve greater savings. There are precedents for allowing third-party provided energy efficiency to be offered to meet utility EERS- or RPS-like requirements. For example, Pennsylvania’s Alternative Energy Portfolio Standard (AEPS) allows third-party, including out-of-state (but within the PJM region), energy efficiency to be used to help meet AEPS obligations.⁴ Another example is Connecticut’s RPS which includes a category (Class III) for energy efficiency and combined heat and power (CHP); regulated generators must buy or otherwise obtain RECs to meet their RPS obligations, including Class III RECs from qualified energy efficiency and CHP sources. NEER could open the opportunity for third parties to bid into EERS or RPS compliance markets.
- **Energy savings credit trading systems:** An EERS or similar system of utility-related energy savings targets or requirements could be broadened to allow trading of energy savings credits among regulated utility or distribution companies and (as just noted) possibly third-party energy savings providers. Such a broadening could allow more cost-effective compliance with the energy savings policy and, thus, the policy’s energy, economic, and environmental benefits. NEER can serve as a registration and trading platform and help assure the integrity energy savings claims and transactions.

The paths for implementing NEER for these applications may vary significantly depending on each state’s utility energy efficiency system and its legal and administrative framework. In some cases, the legislature may explicitly authorize the PUC or other state agency to establish or to contract a third-party to operate an energy savings crediting and tracking system. For example, Michigan’s Public Act 342, the Clean and Renewable Energy and Energy Waste Reduction Act, passed in late 2016, has such a

³ American Council for an Energy-Efficient Economy, 2016, “Overview of Large-Customer Self-Direct Options for Energy Efficiency Programs,” <http://aceee.org/sites/default/files/self-direct.pdf>

⁴ The AEPS category that includes energy efficiency also includes various renewable and non-renewable electric generation technology which, in practice, have crowded out energy efficiency from participation.

provision. In other cases, the PUC or other agency (for example, Minnesota’s Department of Commerce oversees that state’s EERS) may have existing authority to select or designate NEER (perhaps subject to procurement rules) as its tracking system or as an acceptable adjunct for validating self-directed or other energy savings for crediting and compliance with its EERS or similar requirements.

Under these scenarios, NEER could bid to serve as the certification and tracking program or as an adjunct certification and tracking program. If selected or accepted, NEER would apply Specific Compliance/Certification (SCCP) QA/QC criteria for validating project and measure eligibility, EM&V, and other parameters in accord with the PUC or state agency’s requirements. NEER would also provide tracking and reporting functions as required by the state and, if pertinent, serve as the platform for energy savings credit issuance, trading, and retirement.

Integrated resource planning: States that require utilities to undergo IRPs often require inclusion or at least consideration of energy efficiency, demand response, and distributed power generation as demand-side “resources” for purposes of planning resource adequacy. Further, some states have policies directing utilities to procure “all cost-effective” energy efficiency. NEER could support the inclusion of such demand side resources as part of the IRP and similar planning processes by better quantifying their contributions to system resources, reliability, and cost-effectiveness. For example, a steel plant or pulp mill implementing energy efficiency and CHP, as vetted and registered through NEER, could be viewed as a grid resource by the utility serving the territory to help the utility meet resource adequacy requirements at lower cost than would be required through investment in utility-owned generating resources. In principle, such demand-side resources could be rate-based (in part if not in whole) or earn financial incentives.

Like the EERS case, the pertinent state agency could designate NEER as an authorized entity to validate energy savings that utilities and grid operators could use for resource planning purposes.

Electric grid markets: A similar opportunity arises within the context of grid markets, such as energy imbalance markets in part of the country and the capacity markets of some regional transmission organization (RTO)/independent system operator (ISO) grid market operations (e.g., ISO-New England’s Forward Capacity Market and PJM Interconnection’s Reliability Pricing Model establish markets for grid resources that include both electricity generation and demand-side resources).⁵ NEER could vet and register demand-side resources for participation in RTO/ISO organized energy and capacity markets. While ISO-New England and PJM have established processes and EM&V requirements for demonstrating compliance, other RTOs/ISOs (Midcontinent ISO [MISO], Southwest Power Pool, California ISO, New York ISO) that do not yet have a forward capacity market may find NEER useful.

For this application, the RTO/ISO, balancing authority, or other entity could establish SCCP QA/QC criteria for NEER to use to qualify energy efficiency projects and resources.

⁵ Gottstein, M. and L. Schwartz, 2010, “The Role of Forward Capacity Markets in Increasing Demand-Side and Other Low-Carbon Resources: Experience and Prospects,” <http://www.raponline.org/wp-content/uploads/2016/05/rap-gottstein-schwartz-roleoffcm-experienceandprospects2-2010-05-04.pdf>

Tracking building and facility energy efficiency

NEER can be a suitable tool for tracking energy efficiency project and program savings occurring outside of utility-based programs.⁶ Across the United States, large numbers of buildings and facilities are being built to “above code” standards of energy efficiency while many existing buildings undergo retrocommissioning, upgrades, and renovations to achieve greater energy efficiency.

These new and existing building and facility energy efficiency improvements may be undertaken under a variety of policies and programs, among them:

- State or local lead-by-example standards or targets applicable to certain public sector or publicly-supported (e.g., state-bonded) buildings and facilities.
- State or local requirements applicable to certain non-public-sector buildings and facilities (e.g., benchmarking and disclosure, retrocommissioning).
- Publicly financed (e.g., low-income weatherization and Low-Income Housing Tax Credit (LIHTC)-financed) and state or locally incentivized programs (e.g., property assessed clean energy [PACE] financing).
- Voluntary programs (e.g., Better Buildings and Better Plants Challenges, 2030 Districts, ENERGY STAR, LEED (Leadership in Energy and Environmental Design), corporate programs).

The exact pathway for applying NEER to these different program types can vary but the basic approach is similar. The program’s administrator can designate NEER as the platform for registering, recording, and tracking energy savings. It would define QA/QC requirements for the programs. These can include NEER “basic” (a self-certification without independent verification of savings), NEER “enhanced” (more rigorous measurement and verification [M&V] with independent verification), or customized (“SCCP”) criteria for the program.

Many state and local policies (benchmarking and disclosure, new state building standards) and voluntary programs employ “energy use intensity” (EUI), measured as British thermal units (Btu) per square foot, as their main metric. EUI is typically derived by entering energy use data into ENERGY STAR Portfolio Manager, in which the resulting EUI is also weather normalized. Changes in EUI (which may also be adjusted for changed occupancy and usage) are used to determine progress (or lack of progress) toward meeting energy performance targets.

For programs that use Portfolio Manager and the EUI metric, energy billing data entered into Portfolio Manager can be used first to provide energy use as kilowatt-hours (kWh) of electricity and Btus or therms of natural gas (and other fuels) used. Energy savings can be derived by comparing that usage with a pre-upgrade baseline in existing buildings or a modeled baseline (building energy code or common practice) for new construction (with appropriate weather or other adjustments). Numerous standard M&V approaches are available to validate energy savings.

NEER can support programs and objectives that use EUI as a metric. However, while EUI is an important metric of building energy efficiency, physical units of electricity and fuel savings provides other useful

⁶ Building energy efficiency programs and standards and ESPCs can also include water conservation and savings as objectives as well as other resource and environmental aspects. NEER is initially focused on energy savings but could also be configured to include onsite renewable energy, water conservation, and perhaps other performance aspects.

data that can support state and local energy planning, energy resilience and assurance objectives, and air quality goals. For example, distinguishing electricity from natural gas savings is important for understanding energy savings effects on emissions, electric grid planning, and natural gas infrastructure adequacy. NEER could be used to enhance the quantification and credibility of energy savings to support these other objectives.

Other energy efficiency programs do not rely on EUI metrics. In some cases, EUI is inappropriate, such as for exterior lighting upgrades, wastewater treatment facilities, and industrial processes. Also, energy savings performance contracts (ESPCs), sometimes called guaranteed energy savings contracts, are typically subject to M&V reporting requirements in which the ESCO must show energy savings achieved and whether those savings meet contractually guaranteed levels.

In any of these types of programs, NEER can serve as a platform for recording and tracking energy savings. The following use cases illustrate some general approaches for applying NEER but can be adapted to wider sets of program designs and circumstances.

State or local lead-by-example program: new construction

In this example, a state or locality could have an “above code” energy standard for public-sector buildings, requiring design and construction to meet higher levels of energy performance than would be realized from meeting the building energy code or common building design practice. Energy use of new buildings built to “above code” policy would be compared with energy use that would be modeled to have occurred if the building had been built to meet existing building energy code or common practice.

Measuring and tracking energy use and savings as compared to standard design, construction, and operation would indicate if the “above code” policy is succeeding. It could help improve the program’s efficacy, point to operations and maintenance (O&M) energy savings opportunities, provide data on cost as well as physical energy unit savings useful for both fiscal and energy planning purposes, and support analyses of air quality and other environmental impacts.

In this case, the state or local jurisdiction would create an account in NEER and establish a level of QA/QC (including M&V requirements) that meets its needs, ranging from self-reporting under NEER “basic” to a more rigorous validation of energy savings under NEER “enhanced” that may be useful for regulatory purposes, such as for possible air quality compliance. The jurisdiction could also establish customized QA/QC criteria—NEER’s “SCCP” option.

Applicable building or facility operators and agencies would compare actual energy use with modeled energy use (and apply any required normalization for weather and usage) to derive energy savings/waste reduction. These savings would be submitted to NEER, which would validate that they were documented in accord with QA/QC requirements. Such savings would be recorded in an asset output log. The data could be easily retrieved for analysis, public reporting, and other purposes. Registered energy savings/waste reduction data can also be translated into avoided emissions of criteria air pollutants and/or carbon dioxide by air quality regulators, the State Energy Office, local jurisdiction, or others using a variety of tools and emission factors for purposes of air quality management and any greenhouse gas objectives that may exist.

State or local lead-by-example: existing facility upgrades

In this example, a state or locality may have a policy to encourage or require energy efficiency upgrades. The jurisdiction may directly procure upgrades from contractors or may use the ESPC mechanism through an ESCO.

As above, the jurisdiction would establish a NEER account and appropriate QA/QC criteria. In using NEER as a registration and tracking platform, the jurisdiction should clarify by contract who can claim the rights to energy savings, the contractor/ESCO or the jurisdiction or agency that owns the project.⁷ Similarly, if portions of projects are incentivized by utilities, the parties should clarify utility claims to energy savings.⁸

Energy savings would be determined in accordance with the jurisdiction's QA/QC requirements, again ranging from a self-certification under NEER "basic" to having independent verification under NEER "enhanced" with tailoring possible to meet the jurisdiction's requirements. Numerous standard M&V approaches comporting with the International Performance Measurement and Verification Protocol (IPMVP) are available based on bill analysis, sampled measurement and monitoring, modeling, and other approaches.⁹ While NEER does not determine M&V requirements for particular programs, it would affirm that QA/QC requirements, such as for M&V, are met for registered energy savings. For upgrades undertaken through an ESPC, the ESCO typically performs M&V to document that it has met their savings guarantees.

Also, as above, a jurisdiction using NEER can readily access data from NEER's asset output log to track energy savings for analysis, public release, and other purposes. Such data can be fed into broader state energy planning and policy and avoided emissions estimated for air quality management and sustainability policy purposes.

Voluntary building or facility upgrades

A growing number of companies have adopted energy and sustainability goals as part of their corporate objectives. Companies can implement energy efficiency, renewable energy, and other measures at their own facilities. They can also encourage or even require energy and environmental management system standards in their supply chain. Examples include the ISO (International Organization for Standardization) 14001 Environmental Management System and 50001 Energy Management System standards. NEER can support these and it can also open the opportunity for the buying and selling of energy efficiency instruments in a voluntary market.

Companies performing energy efficiency initiatives in their own facilities could opt to use NEER privately to register and track energy savings. The process would be broadly similar to the state and local lead-by-example scenarios, but with companies creating NEER accounts, establishing QA/QC requirements, and then registering applicable energy savings with NEER. NEER could offer an additional measure of credibility to corporate energy savings claims. Such companies could also use the NEER platform as they

⁷ In some states and policy scenarios, energy savings credits may be traded like renewable energy certificates are traded to meet regulatory requirements, claim financial incentives, or earn revenues in voluntary markets.

⁸ For example, a utility may claim some or all energy savings for measures it incentivized.

⁹ IPMVP available via the Efficiency Valuation Organization <https://evo-world.org/en/>. The IPMVP structure is used in M&V protocols developed for the Federal Energy Management Program (FEMP), PJM Interconnection, ISO-New England, and others. The U.S. Department of Energy's Uniform Methods Project and various state and utility technical reference manuals build off the IPMVP.

participate in voluntary initiatives and challenges such as the 2030 Districts, Better Buildings and Better Plants Challenges, ENERGY STAR, and green building certifications like LEED and Green Globes.

A company seeking to encourage or require energy efficiency improvements in its supply chain could specify use of NEER to register energy savings from supplier firms.¹⁰ In that case, the company would establish QA/QC requirements with NEER and ask suppliers to establish NEER accounts and submit their energy savings/waste reduction for registration and reporting.

The broadest scenario would be for a wide private energy efficiency market using NEER as a platform. A company may wish to support energy efficiency efforts outside of its corporate boundaries either as a direct part of its sustainability and social responsibility policies or possibly to offset energy savings or renewable energy performance shortfalls in its own facilities. Such a company may wish to purchase energy savings certificates from, for example, low-income weatherization programs or energy efficiency projects in economically disadvantaged communities, to serve social responsibility goals while also supporting sustainability objectives. In such cases, companies, nongovernmental organizations, agencies, and localities wishing to buy and sell energy savings credits would each have NEER accounts to allow the processing of the transaction and exchange of instruments.

Air quality and emissions regulations, targets, and policies:

By reducing the need for electricity generation and onsite fuel consumption, energy efficiency mitigates adverse environmental impacts, including emissions of air pollutants and their health effects.¹¹ Air quality regulators can consider energy efficiency at different levels for varied purposes under different regulatory programs, ranging from broad planning and projection purposes to formalized crediting of energy efficiency for enforceable regulatory purposes. Further, avoided carbon dioxide (CO₂) and other greenhouse gases can contribute to state, local, and private climate and resilience policy targets and goals.

The EPA has outlined pathways for incorporating energy efficiency and renewable energy into National Ambient Air Quality Standards (NAAQS) State Implementation Plans (SIPs) in an “EE/RE Roadmap Manual” that builds on existing formal guidance.¹² There are precedents for including energy efficiency formally in NAAQS SIPs.¹³ An analogous SIP process under the Regional Haze Program may also be amenable to including energy efficiency. Figure 2 indicates counties measuring ozone at levels above the 2015 ozone NAAQS. However, more recent data may affect EPA’s determination of attainment status of counties. Figure 3 shows “Class I Areas” under the Regional Haze Program. States that do not have Class

¹⁰ Precedents include companies using supply chain relationships to encourage or require suppliers to adopt the ISO 9001 Quality Management System standard and ISO 14001 Environmental Management System standard. There may be similar initiative concerning the emerging ISO 50001 Energy Management System standard.

¹¹ NASEO Energy Efficiency Pathway Templates offer a discussion of energy efficiency as an emissions reduction tool, including for Clean Air Act planning and compliance purposes, and serve as a template states can use to facilitate discussions with air quality managers. The templates and related resources are available at <http://naseo.org/ee-pathways>.

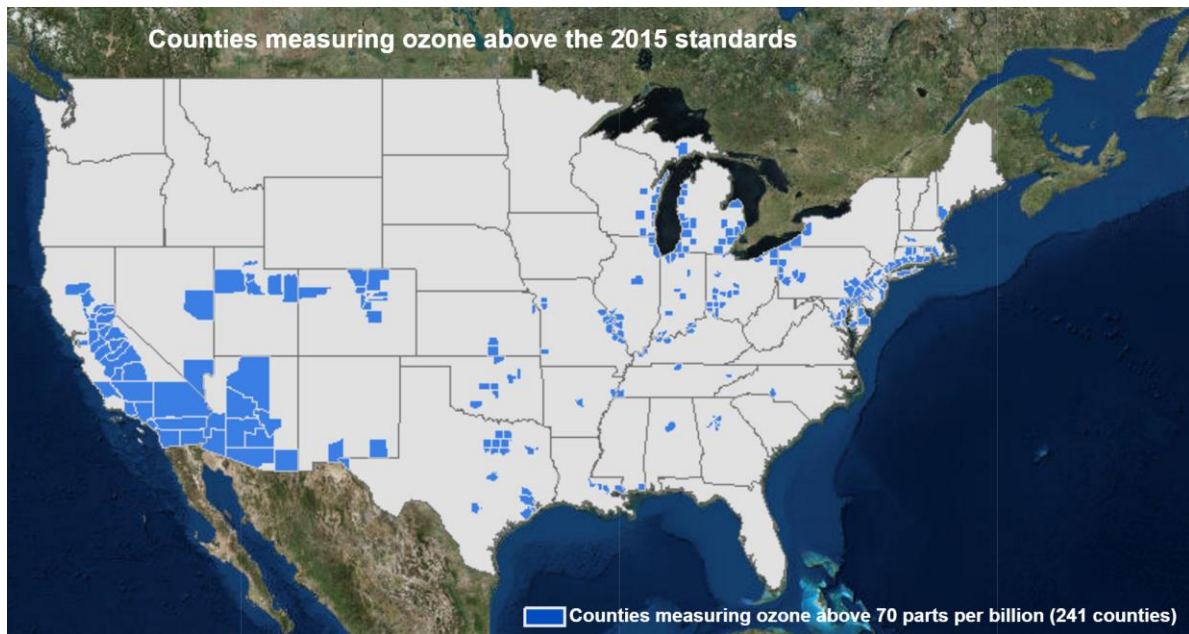
¹² U.S. EPA, 2012, “Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans,” <https://www.epa.gov/energy-efficiency-and-renewable-energy-sips-and-tips>

¹³ For example, the Texas Commission on Environmental Quality included NO_x reductions from building energy codes as well as local government and utility energy efficiency programs in a 2005 Dallas-Ft. Worth area SIP revision. See <https://www.tceq.texas.gov/airquality/stationary-rules/nox/eere.html>

I Areas may still be subject to the Regional Haze Program requirements for regional cooperation to abate visibility impairment to other states' Class I Areas.

Many states in the eastern half of the United States are subject to the Cross-State Air Pollution Rule (CSAPR), which requires states to reduce NO_x and SO₂ emissions from power plants to abate ground-level ozone and fine particulate pollution in downwind states. Figure 4 shows CSAPR state coverage. EPA sets emission budgets for states covered by the rule, allowing states the flexibility to allocate and allow trading of emission allowances. States have the flexibility under CSAPR to “set aside” a portion of NO_x and SO₂ allowances for allocation to EE/RE projects, as some states did (for NO_x) under prior NO_x budget trading programs.¹⁴ Under a NO_x or SO₂ allowance set-aside program, a state could issue allowances for qualifying energy efficiency (and renewable energy) projects. Such allowances could be sold to earn additional revenue to support such projects or could be retired to reduce allowable tonnage of emissions and show progress toward NAAQS compliance.

Figure 2. Counties measuring ozone above the 2015 standards



Source: U.S. EPA

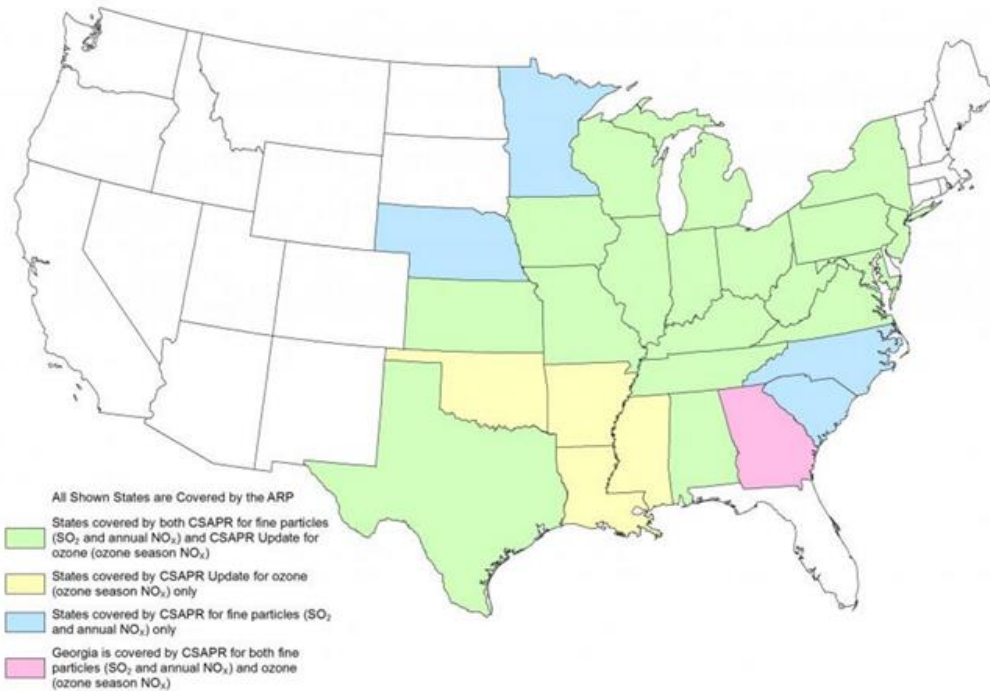
¹⁴ U.S. EPA, 2006, “State Clean Energy-Environment Technical Forum Roundtable on State NO_x Allowance EE/RE Set-Aside Programs, June 6, 2006, Call Summary.” https://www.epa.gov/sites/production/files/2016-03/documents/summary_paper_nox_allowance_6-6-2006.pdf.

Figure 3. Mandatory Class I Areas (under Regional Haze Program)



Source: U.S. EPA

Figure 4. States Covered by the Cross-State Air Pollution Rule



Source: U.S. EPA

Energy savings assessed and quantified by NEER can be translated into avoided criteria pollutant emissions from the power sector by using such tools as EPA’s eGRID and AVERT,¹⁵ PJM emission factors, or using dispatch or other models tailored to a particular state or utility service territory. Emissions impacts of reduced onsite natural gas or other fuel use can be derived using published emission factors (e.g., EPA AP-42),¹⁶ equipment specifications, or other means.

Air quality agencies can use NEER-registered energy savings and their concomitant avoided emissions for projection and planning purposes. They can use such energy savings to support and validate inclusion of energy efficiency in SIPs. A state opting to offer “EE/RE set-aside” allowances for NOx or other tradable emissions could use NEER-registered savings as a basis for set-aside allowance distribution.

In the case of set-aside allowance applications, energy efficiency project owners or other savings claimants (such as an ESCO or other energy service provide) would create NEER accounts. They would show project eligibility, document energy savings in accord with M&V and QA/QC standards that the air quality agency may require, and attest to have rights to project energy savings. The state could require NEER vetting of savings as a basis for awarding set-aside emission allowances.

Finally, NEER can support state and local greenhouse gas objectives. NEER-registered savings from utility-supported programs, state and local lead-by-example programs, private voluntary efforts, efficiency finance mechanisms, and other sources (e.g., low-income weatherization programs, building energy codes) could be tallied by air quality agencies or other authorities to track CO₂ (and potentially other greenhouse gas) emission impacts.

General Guidance for Specific Compliance/Certification Program (SCCP) Criteria Development

The NEER framework requires that any jurisdiction, private entity, or non-governmental organization using NEER to support an energy-related policy set their own program requirements, including project eligibility requirements, EM&V standards, etc. In NEER, these organizations are called Client Jurisdictions and the programs are called Specific Compliance/Certification Programs (SCCPs). Individuals and entities may apply to participate in a particular SCCP by completing the SCCP Asset Application Addendum along with their standard Asset Application. This section outlines key programmatic requirements that a Client Jurisdiction should consider when developing criteria for its SCCP and its SCCP Asset Application Addendum.

¹⁵ U.S. EPA, Emissions & Generation Resource Integrated Database (eGRID) <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid> and AVoided Emissions and generation Tool (AVERT) <https://www.epa.gov/statelocalenergy/avoided-emissions-and-generation-tool-avert>

¹⁶ U.S. EPA, AP-42: Compilation of Air Emission Factors, <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors>

Administrative Information

Client Jurisdictions should first define some basic identifying information for their SCCP. This may include:

- **Client Jurisdiction Name** (e.g., Massachusetts Executive Office of Energy and Environmental Affairs)
- **SCCP Name** (e.g., Massachusetts Energy Efficiency Resource Standard)
- **SCCP Administrator** (e.g., the individual or specific department designate to oversee the administration and implementation of the SCCP.)
- **Brief description of the SCCP**

Project Eligibility Requirements

Client Jurisdictions should include explicit guidance on which individuals and entities are eligible to apply for participation in the SCCP in their SCCP Asset Application Addendum. Client Jurisdictions may ask the following questions, among others, to determine which projects will be eligible to participate in the SCCP:

- What geographic location is acceptable for physical assets? (e.g., Must a project be implemented in a certain region of the country, in the state, or in a specific county?)
- Which project types are acceptable? (e.g., rate-payer funded programs only, private investments)
- What time period is acceptable for project installations?
- Are all types of project aggregation allowed, and what information must be disclosed for aggregated projects?

QA/QC Protocols for Static and Dynamic Data

NEER works to support SCCPs by operationalizing the quality assurance and quality control (QA/QC) processes needed to ensure that Assets and their reported energy savings (Asset Output) conform to the SCCP requirements. Client Jurisdictions may simply choose one of NEER's default QA/QC Protocols, or may customize a **Static Data QA/QC Protocol** for its SCCP, which will be assigned a unique Static Data QA/QC code. NEER's default QA/QC Protocols are:

- **NEER Basic:** designed to support voluntary disclosure, or
- **NEER Enhanced:** designed to support regulatory quality EM&V.

In designing their own QA/QC Protocols, SCCPs should consider reporting requirements for static and dynamic data as defined below:

- **Static Data** consists of key data fields, attestations and certifications referenced in an Asset Application that will not change from one Vintage period to another. Some basic examples of Static Data include the NEER Account Holder name, Asset location (state), and initial date of Asset operation. Client Jurisdictions may customize protocol elements such as required project registration documents and procedural steps, requirements for EM&V plans, and AIV certification requirements.
- **Dynamic Data** includes information associated with Asset Output that varies from one reporting period to another, including the quantity of Asset Output and Vintage. Client Jurisdictions may

customize specific requirements for M&V reports, AIV certification, and procedural steps for submission, review and approval of Dynamic Data.

Tradable Instruments Requirements (if applicable)

NEER can create Instruments, sometimes referred to as Certificates, to track various Attributes (e.g., credits, emissions reductions, allowances) associated with each unit of Asset Output from an energy efficiency project. Instruments may be traded with other NEER Account Holders, and may be retired voluntarily or to demonstrate participation or compliance with a SCCP. SCCP Administrators whose programs require the issuance of instruments issue Single Attribute Instruments (with an associated SCCP ID Number) to Assets that have met all SCCP data QA/QC requirements. The SCCP Attribute represents the specific Attribute (e.g., megawatt-hour of electricity saved or tons of NOx emissions avoided) which would be used to document compliance with a given regulation or program or to indicate performance under a voluntary program or initiative.

When designing procedures for SCCP Attribute issuance, trading, and retirement, the Client Jurisdiction should consider the following factors:

- Acceptable Vintage
- Retirement deadline
- Any restrictions for trading Instruments
- Provisions for historical data (e.g., Asset Output data for Vintages up to two calendar years prior to the calendar year in which the Asset is first registered can be submitted)

Additional Parties

In their SCCP Asset Application Addendums, Client Jurisdictions may identify any additional parties required for participation, such as Qualified Reporting Entities (QREs)¹⁷ and Accredited Independent Verifiers (AIVs)¹⁸. The Client Jurisdiction may also specify any requirements additional to NEER's minimum requirements for AIVs to perform verification duties for their SCCP, and develop a procedure for accrediting AIVs for participating in their SCCP.

Policies and Rules

Client Jurisdictions should include any additional policies and rules in their SCCP Application Addendum, which SCCP candidates will agree to in their Asset applications. Examples of additional rules include conflict of interest policies, Know Your Customer Procedures, and business confidentiality policies.¹⁹

¹⁷ QREs report Asset Output data. QREs include, but are not limited to, balancing authorities, electric service providers, public utility commissions, interconnecting utilities, scheduling coordinators, independent third-party meter readers, and Accredited Independent Verifiers.

¹⁸ An AIV is a person or entity hired by a Jurisdiction, Energy Efficiency Provider, Specific Compliance/Certificate Program Administrator and/or the NEER Administrator to perform verification duties. These duties could include assessing baseline conditions, confirming that energy efficiency measures are operating according to their specifications, and confirming post-implementation Asset Output. An Accredited Independent Verifier may also serve in the role of a Qualified Reporting Entity.

¹⁹ Information designated as business confidential in the NEER includes Asset Output for each Asset, street address of the Asset, number of Instruments in an Account, and the amount and timing of Instrument transfers. Account Holders may request that certain additional information be held business confidential; this information will be available to the NEER Administrator and the relevant SCCP and will only be used and released in aggregate through

Additional Data Fields

If a Client Jurisdiction wishes to include any additional data fields for the SCCP (e.g., CO₂ avoided emissions), it should submit the approved methodology for associated calculations to the NEER Administrator.

Conclusion

NEER Project Team states and other project partners worked together to help develop and explore opportunities for applying NEER in support of state energy and environmental policy objectives.

States often focus first on their utility customer-financed energy efficiency programs such as EERS and similar requirements when considering energy efficiency opportunities. While such utility-based policies and programs are very important, there are large amounts of energy savings occurring through projects and activities beyond the purview of utilities. And the energy efficiency potential for utility and non-utility based energy savings is much larger still.

Most EERS or similar utility-based energy efficiency programs have well-established means for recording, tracking and attributing energy savings. This suggests very limited NEER opportunities under existing EERS programs, although states establishing new programs or revamping existing ones may find NEER to be an attractive platform. However, several complementary or supplemental applications could arise. For example, some states have large commercial and industrial utility customer “self-direct” programs; NEER could be designated as the platform for validating self-directed project energy savings.

NEER could also be a tool for evolving utility-focused programs into a more flexible “EERS 2.0” that could allow trading of energy savings credits and allow third-party provided energy savings to be sold to utilities to help them more cost-effectively meet their obligations. These possibilities could broaden the scope of energy efficiency investment and implementation and lower compliance costs.

Energy savings occurring through projects and activities beyond the purview of utilities are unevenly quantified and tracked. Acknowledgement and tracking of such energy savings (and their environmental benefits) would improve recognition of energy efficiency programs’ and policies’ contributions to energy and environmental policy objectives, and can enhance state energy, air quality, and other planning.

This Roadmap outlines broad approaches for using NEER to enhance tracking of state and local lead-by-example energy efficiency programs and building standards, publicly funded or incentivized programs, voluntary energy efficiency initiatives, and corporate energy and sustainability objectives.

Further, NEER-validated energy savings can be translated into avoided criteria air pollutant and greenhouse gas emissions which can support air quality planning, management, and compliance needs; emission allowance trading programs; and state and local climate and resilience targets.

NEER offers state, localities, and private entities a tool to support multiple energy objectives.

the public reporting process. Client Jurisdictions may stipulate further information that may or may not be held confidential for Assets registered to comply with the SCCP.

Project Team State-Specific Sections Will Be Provided as Separate Documents