



# Energy Efficiency Tracking *Considerations for Kentucky*

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## Executive Summary

Energy efficiency projects and programs are implemented in the Commonwealth of Kentucky by several entities, including: investor-owned utilities, electric cooperatives, municipal utilities, state and local agencies, Community Action Agencies, and industrial, commercial and residential energy consumers. The totality of the savings impacts of energy efficiency implemented by these entities are poorly understood. While regulated utilities in Kentucky report data on the impacts of their energy efficiency programs to the Kentucky Public Service Commission as a part of program approval and review, other energy efficiency providers are not subject to reporting requirements. Furthermore, neither regulated utilities nor other energy efficiency providers are subject to standardized evaluation, measurement, or verification requirements, making it difficult to compare any available data on savings impacts.

This report, produced as a part of a broader project focused on standardized evaluation, measurement and verification (EM&V) of energy efficiency, specifically examines the tracking of energy efficiency and energy efficiency credits in Kentucky. The first section of this report examines options for the Commonwealth to bolster the ways in which it tracks energy efficiency. The latter section of this report considers the issuance of tradable instruments or “credits” to energy efficiency projects for use towards compliance with regulatory programs, and surveys the design and implementation of several credit tracking systems.

Based on our review of energy efficiency tracking protocols and systems, as well as energy efficiency credit tracking protocols and systems, we make the following recommendations should the Commonwealth of Kentucky decide to pursue energy efficiency tracking to better understand energy efficiency as a resource or participate in existing or future compliance programs.

- 1) Consider implementing more sophisticated energy efficiency tracking practices to increase industry transparency and understanding of energy efficiency as a resource.
- 2) Consider establishing processes and standards to allow energy efficiency to receive credits under existing or future compliance programs.
- 3) Consider leveraging an existing credit tracking system to create, manage and retire energy efficiency credits.

## Glossary

**Credit:** Generic term used in this report to refer to a tradable instrument issued to a renewable energy or energy efficiency project. Several terms are used to describe credits issued to energy efficiency projects depending on the particular compliance or voluntary purpose that the credit is used towards, including: “Energy Efficiency Credit”, “Energy Savings Certificate”, “Energy Efficiency Certificate”, “White Tag®” and “offset credit.”

**Credit Tracking System:** Generic term used in this report to describe an electronic database that provides a basis for creating, managing and retiring credits.<sup>1</sup> Several terms are used to describe credit tracking systems, including: “certificate tracking system” and “registry.”

**Energy Efficiency Resource Standard (EERS):** A policy that establishes specific, long-term targets for energy savings that utilities or non-utility program administrators must meet through customer energy efficiency programs.<sup>2</sup>

**Emissions Trading Programs:** An approach to reducing pollution including two common components: (1) an enforceable limit on the emissions of a specific pollutant from regulated sources, and (2) tradable allowances equal to the pollutant limits, authorizing allowance holders to emit a specific quantity of the pollutant.<sup>3</sup>

**Evaluation, Measurement and Verification (EM&V):** Evaluation is the conduct of any of a wide range of assessment studies and other activities aimed at determining the effects of an energy efficiency program (or a portfolio of programs). Measurement and verification is associated with the documentation of energy (and/or demand) savings at individual sites or projects.<sup>4</sup>

**Portfolio Standards:** A regulatory mandate requiring utility companies to source a certain amount of the energy they generate or sell from a particular source or set of sources.<sup>5</sup>

**Regional Transmission Organization:** Third party organizations that administer the transmission grid on a regional basis throughout North America.<sup>6</sup>

**Retirement:** the process of permanently removing a tradable instrument from trading. Once retired, tradable instrument may be included in a compliance filing, used to support a marketing claim, meet a sustainability objective, or other purpose.<sup>7</sup>

**Technical Reference Manual (TRM):** A TRM is a technical resource (in the form of a document, searchable database, spreadsheet, or website) that includes information used in the planning and evaluation of energy efficiency programs.<sup>8</sup>

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<sup>1</sup> U.S. Department of Energy (DOE). Office of Energy Efficiency & Renewable Energy. Renewable Energy Certificates (RECs). November 15, 2016. Webpage: <http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=3>.

<sup>2</sup> American Council for an Energy-Efficient Economy (ACEEE). Energy Efficiency Resource Standard (EERS). November 15, 2016. Webpage: <http://aceee.org/topics/energy-efficiency-resource-standard-eers>.

<sup>3</sup> U.S. Environmental Protection Agency (EPA). What is Emissions Trading? November 15, 2016. Webpage: <https://www.epa.gov/emissions-trading-resources/what-emissions-trading>.

<sup>4</sup> State and Local Energy Efficiency Action Network (SEE Action). Energy Efficiency Program Impact Evaluation Guide. December 2012.

<sup>5</sup> Solar Energy Industries Association (SEIA). Renewable Energy Standards. November 14, 2016. Webpage: <http://www.seia.org/policy/renewable-energy-deployment/renewable-energy-standards>

<sup>6</sup> Federal Energy Regulatory Commission (FERC). Regional Transmission Organizations (RTO)/Independent System Operators (ISO). November 15, 2016. Webpage: <https://www.ferc.gov/industries/electric/indus-act/rto.asp>.

<sup>7</sup> See Hamrin, J. and Wingate, M. Center for Resource Solutions. Developing a Framework for Tradable Renewable Certificates. Final Report. Version 2.4. May 29, 2002.

## Introduction

In this report, we examine options for Kentucky to bolster the ways in which it tracks energy efficiency occurring in the Commonwealth so that Kentucky can better understand energy efficiency as a resource and/or be prepared to respond to future state or federal air quality or energy regulations. Specifically, this report includes a review of existing energy efficiency tracking systems and recommendations on the protocols and software solutions Kentucky might consider in order to advance the Commonwealth's current tracking practices. A companion report titled "Monetizing Energy Efficiency: Implementation Strategies for Kentucky" considers how Kentucky might leverage standardized EM&V and tracking to monetize energy efficiency via existing and future markets.

This report is produced under a 2014 U.S. Department of Energy (DOE) award under the State Energy Program (SEP). The Kentucky Department for Energy Development and Independence (DEDI) and the Midwest Energy Efficiency Alliance (MEEA) initiated this project to evaluate various aspects of a Kentucky framework for the standardized evaluation, measurement and verification (EM&V)<sup>9</sup> of energy efficiency occurring in the Commonwealth.

During the first phase of this project, MEEA conducted research and produced a report<sup>10</sup> describing core issues, concepts and examples from state, regional, federal and private approaches to the EM&V of energy efficiency. During the second phase of the project, MEEA and DEDI convened a group of energy efficiency stakeholders in Kentucky to work collaboratively in developing a statewide EM&V framework for the Commonwealth. This phase of the project resulted in the development of a Roadmap that lays out the principles that would guide the development, use and maintenance of a statewide Technical Reference Manual (TRM).<sup>11</sup>

## Background on Energy Efficiency in Kentucky

The energy efficiency landscape in the Commonwealth of Kentucky is complex and involves several stakeholders including state agencies, investor-owned utilities and electric cooperatives, energy service companies, large manufacturers, residential and commercial customers, and Community Action Agencies, among others.

The Kentucky Public Service Commission (PSC) regulates energy efficiency programs implemented by two categories of retail electric suppliers: investor-owned utilities (IOUs) and rural electric cooperative companies (RECCs).<sup>12</sup> The IOUs regulated by the PSC are: Louisville Gas and Electric Company (LG&E), Kentucky Utilities Company (KU), Kentucky Power Company (a unit of American Electric Power or AEP) and Duke Energy Company. The PSC regulates the nineteen RECCs that jointly own and purchase power from one of two generation and

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<sup>8</sup> See Lawrence Berkeley National Laboratory. Introduction to Technical Reference Manuals (TRMs) for Kentucky Energy Efficiency Programs. Presentation for Kentucky EM&V Stakeholder Meeting #2. March 24, 2016. PDF File: [https://eetd.lbl.gov/sites/all/files/kentucky\\_trms\\_kentucky\\_march\\_2016\\_schiller\\_v3.1.pdf](https://eetd.lbl.gov/sites/all/files/kentucky_trms_kentucky_march_2016_schiller_v3.1.pdf).

<sup>9</sup> See Glossary for a definition of EM&V and other terms used throughout this report.

<sup>10</sup> Friedman, J. and Vijaykar, N. Midwest Energy Efficiency Alliance (MEEA). Considerations for a Statewide Evaluation, Measurement, and Verification Framework for Energy Efficiency in Kentucky. October 2015.

<sup>11</sup> Midwest Energy Efficiency Alliance (MEEA). Kentucky TRM Roadmap. August 2016.

<sup>12</sup> Energy and Environment Cabinet, Kentucky Department for Energy Development and Independence. Kentucky Energy Profile 2015. 5<sup>th</sup> ed. 2015.

transmission cooperatives (G&T): East Kentucky Power Cooperative (EKPC) and Big Rivers Electric Corporation (Big Rivers).<sup>13</sup> The IOUs and RECCs regulated by the PSC are not required to meet energy savings targets under Kentucky law; however, each IOU and G&T regulated by the PSC regularly develops multi-year energy efficiency plans and implements energy efficiency programs. These plans and programs are reviewed and approved by the PSC, and generally contain projections of savings impacts from energy efficiency programs.<sup>14</sup> Under Kentucky law, the PSC may approve full cost recovery, recovery of lost revenues, and utility incentives for energy efficiency programs.<sup>15</sup>

Energy efficiency projects in the Commonwealth are also implemented outside of utility programs. The Kentucky chapter of the Energy Services Coalition estimates that more than \$1 billion in projects have been completed statewide through energy service performance contracting (ESPC) from the time that enabling legislation<sup>16</sup> was passed in 1996 through the end of 2016.<sup>17</sup> ESPC has been used by state government buildings, municipalities, public schools and universities.<sup>18</sup> Energy service companies (ESCOs) contracted to carry out ESPCs also implement privately-funded energy efficiency projects for residential, commercial, institutional and industrial customers in Kentucky. Large industrial customers, for example, use energy efficiency to meet internal sustainability goals.<sup>19</sup> Energy efficiency and weatherization projects are also implemented in low-income households in Kentucky. Community Action Kentucky in partnership with the Kentucky Housing Corporation, for example, administers a number of energy assistance and energy efficiency programs in Kentucky through its network of 23 Community Action Agencies with offices located in all 120 counties in Kentucky.<sup>20</sup> These programs include home weatherization under DOE's Weatherization Assistance Program (WAP). Through WAP, eligible low-income households receive energy efficiency measures such as insulation, duct repair and air sealing to reduce their home's energy consumption and lower their household utility bills.<sup>21</sup>

## Energy Efficiency Tracking in Kentucky Today

While a robust energy efficiency landscape exists in Kentucky, the totality of the savings impacts of energy efficiency occurring in the Commonwealth are poorly understood. This might be attributed to the fact that utilities and other energy efficiency providers in Kentucky are not subject to uniform EM&V or reporting requirements, and that the state does not maintain a comprehensive database or track the impacts of energy efficiency projects. While IOUs and RECCs regulated by the PSC carry out varying levels of EM&V for the programs they implement as required by the PSC for program approval, the PSC does not impose uniform EM&V or

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<sup>13</sup> See Appendix for a map of electric service areas in Kentucky.

<sup>14</sup> Gardner, James; Greenwell, Aaron; Russell, Bob; Raff, Richard. Kentucky Public Service Commission. Personal interview. October 13, 2015.

<sup>15</sup> Ky. Rev. Stat. § 278.285

<sup>16</sup> Ky. Rev. Stat. § 56.770-784, 45A.343-460.

<sup>17</sup> Colten, Lee. State and Local Energy Report. Energy Savings Performance Contracting in Kentucky's Local Governments. July 30, 2014. Webpage: <http://stateenergyreport.com/2014/07/30/energy-savings-performance-contracting-in-kentuckys-local-governments/>.

<sup>18</sup> Id.

<sup>19</sup> Klocke, Jeff; Greene, Dee. Toyota Motor Corporation. Personal interview. October 16, 2015.

<sup>20</sup> Community Action Kentucky. Weatherization. November 6, 2016. Webpage: <http://www.communityactionky.org/weatherization.html>.

<sup>21</sup> Kentucky Housing Corporation. Weatherization Assistance Program. November 15, 2016. Webpage: <http://www.kyhousing.org/Development/Single-Family/Pages/Weatherization-Assistance-Program.aspx>.

reporting requirements on the utilities it regulates.<sup>22</sup> Where ESPCs are carried out for public agencies, Kentucky law<sup>23</sup> requires that the projects be evaluated, measured and verified in accordance with the International Performance Measurement and Verification Protocol (IPMVP); in practice, however, methodologies used to measure and verify impacts of ESPC projects and the format in which those impacts are reported vary widely.<sup>24</sup> Where energy efficiency projects are carried out by ESCOs for private clients, the impacts of these projects are not subject to any EM&V requirements beyond those required by contract.<sup>25</sup> Community Action Agencies and other residential efficiency programs are not subject to EM&V or reporting requirements by the Kentucky PSC or Kentucky DEDI.

In 2011, the Kentucky Department for Energy Development and Independence (DEDI) developed an Excel-based reporting template with the objective of collecting more data on the state of the utility-run energy efficiency industry in Kentucky.<sup>26</sup> Each of the utilities under the jurisdiction of the PSC voluntarily report data on their electric efficiency programs through this template, as does the Tennessee Valley Authority (TVA). Energy efficiency projects implemented outside of utility programs, by private entities such as Community Action Agencies, energy service companies, or industrial companies, are not reported to DEDI through this reporting template. TVA, EKPC and Big Rivers report data aggregated across their distribution cooperatives. In addition to annual data on utility sales and customers, portfolio-level data on program costs, incentives and lost revenues, and static data pertaining to energy efficiency programs, the reporting template asks utilities to submit program metric data: incremental energy savings, winter demand savings, summer demand savings, program budget, and program participation. Utilities submit these data to DEDI on an annual basis. DEDI does not specify protocols for the EM&V of utility program metrics, nor does it request documentation or supporting information on how program metrics were measured or calculated. DEDI does not verify the program metrics reported by utilities. DEDI has found, however, that the data that utilities submit through the reporting template are generally consistent with data these utilities report to the PSC in required filings.<sup>27</sup>

DEDI's energy efficiency reporting template provides the agency with data on the impacts of utility energy efficiency programs, reported in a standardized format. While these data might otherwise have been accessible through a review of each utility's individual filings before the PSC, the reporting template adds a measure of transparency and accessibility to data on utility energy efficiency investments, and thereby improves the agency's understanding of trends in Kentucky's utility-administered energy efficiency industry.<sup>28</sup> Our research has not revealed any other ongoing efforts to track the impacts of energy efficiency programs or projects in the Commonwealth of Kentucky at a scale similar to, or larger than, the effort managed by DEDI.

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<sup>22</sup> See Friedman, J., Vijaykar, N. Midwest Energy Efficiency Alliance (MEEA). Considerations for a Statewide Evaluation, Measurement, and Verification Framework for Energy Efficiency in Kentucky. October 2015; Gardner, James; Greenwell, Aaron; Russell, Bob; Raff, Richard. Kentucky Public Service Commission. Personal interview. October 13, 2015.

<sup>23</sup> Ky. Rev. Stat. § 56.774(6). Note that Kentucky law allows a method other than IPMVP to be used where specific data limitations or documented unique characteristics of the project prevent its use.

<sup>24</sup> Wolford, Joe. Finance and Administration Cabinet, Commonwealth of Kentucky. Phone Interview. October 14, 2015.

<sup>25</sup> Boyd, John; Azarra, Michael. Energy Services Coalition, Kentucky chapter. Phone interview. October 14, 2015.

<sup>26</sup> Colten, Lee. Energy and Environment Cabinet, Kentucky Department for Energy Development and Independence. Phone Interview. July 25, 2016.

<sup>27</sup> Id.

<sup>28</sup> Id.

## Advancing Energy Efficiency Tracking

Kentucky may choose to implement protocols and systems that advance energy efficiency tracking in the Commonwealth beyond DEDI's current reporting template. There are a number of ways to broaden the scope of energy efficiency tracking and improve its sophistication, including for example: broadening coverage of DEDI's reporting template to include energy efficiency projects implemented by non-regulated utilities, privately-funded energy efficiency projects, ESPC projects facilities, or projects implemented by Community Action Agencies or other low-income housing organizations; creating standards for measurement and verification of project impacts; and recording measure-level data.

Minnesota is an example of a state with an energy efficiency tracking system that seeks to gather a much larger scope of data. The state uses an online statewide database known as Energy Savings Platform (ESP®) for planning and reporting energy efficiency programs administered by 184 investor-owned, municipal, and cooperative utilities.<sup>29</sup> The ESP database was developed in response to new state legislation<sup>30</sup> that extended energy efficiency requirements to municipal and cooperative utilities.<sup>31</sup> As such, ESP contrasts sharply with DEDI's reporting template, which does not serve any compliance purpose nor track the impacts of specific energy efficiency projects. Minnesota's increased emphasis on energy efficiency highlighted the need for more effective EM&V and a better software tools for the utilities and the State in order to maintain transparency and accountability to ratepayers. ESP was funded through a unique public-private partnership.<sup>32</sup> Development costs are shared by the State of Minnesota and Energy Platforms, a privately held company. The State of Minnesota secured license rights for its use and the use of all the regulated utilities. Energy Platforms retains the rights to ESP and is free to license the software to individual utilities and other states.<sup>33</sup>

ESP includes three different cloud-based<sup>34</sup> software applications. ESPCalcs™ is a set of more than 140 user-definable savings calculators reflecting deemed savings values and algorithms contained in Minnesota's Technical Reference Manual. Users of ESPCalcs calculate program savings and rebates through this software tool, and can feed this data directly into proprietary tracking systems. ESPTracking™ is a utility tracking tool used by smaller utilities in Minnesota that have not developed their own sophisticated tracking systems. ESPReporting™ is a statewide reporting tool accessible to the Minnesota Public Utility Commission and all of the utilities in the state. ESPReporting is comprised of two separate applications: EE Program Plan Reporting and EE Program Performance Reporting. Utilities are required by the Minnesota Department of Commerce, Division of Energy Resources (DER) to use ESPReporting to submit Plans and Program Performance Reporting; while the use of ESPCalcs and ESPTracking are optional for utilities. DER does not require that program performance data reflect evaluated values, nor does it specify any protocols for program EM&V.<sup>35</sup>

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<sup>29</sup> Energy Savings Platform. November 15, 2016. Webpage: <http://www.energyplatforms.com/ESP.aspx>.

<sup>30</sup> Minnesota's Next Generation Energy Act. 2007 Chapter 136 - S.F. No. 145.

<sup>31</sup> Myser, Mike. Energy Platforms. Phone interview. July 19, 2016.

<sup>32</sup> Id.

<sup>33</sup> Id.

<sup>34</sup> ESP tools are cloud-based, which means that the software is managed on Microsoft Azure servers and not on utility servers – utilities may simply access the software tools through an internet browser.

<sup>35</sup> Myser, Mike. Energy Platforms. Phone interview. July 19, 2016.

Tracking energy efficiency in a sophisticated manner can help a state better characterize its energy efficiency resource. The implementation of a formal database tracking energy efficiency occurring through and beyond ratepayer-funded programs would also allow states to respond nimbly to future state or federal regulation requiring or promoting tracking of energy efficiency programs.<sup>36</sup> In Kentucky's case, the implementation of advanced systems and protocols for tracking energy efficiency might help the state mitigate potential problems related to spreadsheet version control, improve data security, simplify program reporting, provide more transparency and accountability to utility ratepayers and taxpayers, minimize related support costs, and/or meet potential future state or federal reporting requirements.

A critical design feature of a tracking system that accommodates the participation of non-utility energy efficiency providers (such as ESCOs, Community Action Agencies, or even customers) is a mechanism to avoid double-counting. In several cases, these providers may be relying on utility incentives or participating in a utility program in implementing their project, and thus, the savings occurring through their project may already be reported by the utility. In order to ensure that these savings are not double-counted, the platform might require an attestation that the project was not participating in a utility program. Promoting voluntary participation by non-utilities in an energy efficiency tracking system would be a challenge, particularly from entities that have little experience with measuring and verifying the impacts of their energy efficiency projects. In order to promote participation by non-utility entities, Kentucky may consider coordinating outreach to energy efficiency providers, providing guidance on the measurement of savings from a variety of project types, and ensuring that the process of uploading data to a tracking system is accessible and straightforward.

Having considered pathways for Kentucky to advance its energy efficiency tracking practices, this report turns to an examination of the conditions under which energy efficiency providers might receive tradable instruments for the tracked impacts of energy efficiency projects.

## Energy Efficiency Credits and Credit Tracking Systems

Several regulatory and statutory regimes contemplate the use of energy efficiency to meet compliance requirements. Energy efficiency resource standards (EERS), currently implemented in 25 states, establish long-term targets for energy savings that utilities or non-utility program administrators must meet through energy efficiency programs.<sup>37</sup> In Nevada, New York, Connecticut, Michigan and Pennsylvania, energy efficiency is an eligible resource under broader utility procurement requirements (otherwise known as portfolio standards).<sup>38</sup> At the

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<sup>36</sup> An example of federal regulation promoting the standardized tracking of energy efficiency programs is the U.S. Environmental Protection Agency's (EPA) Clean Power Plan (CPP). 80 Fed. Reg. 64,662 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60) Under the CPP, energy efficiency resources may be used to help states meet carbon emission reduction targets. See 80 Fed. Reg. 64,662, at 64,666. In order for energy efficiency resources to be used in this manner, each state must include an EM&V plan within its state plan. The minimum requirements for an EM&V plan are found in the final CPP at 80 Fed. Reg. 64,909. The EPA also published draft Evaluation, Measurement and Verification Guidance for Demand-Side Energy Efficiency (EE) in order to assist states in developing EM&V plans. Note that at the time of publication of this report, the CPP is stayed by the U.S. Supreme Court.

<sup>37</sup> American Council for an Energy-Efficient Economy (ACEEE). Energy Efficiency Resource Standard. November 11, 2016. Webpage: <http://aceee.org/topics/energy-efficiency-resource-standard-eers>.

<sup>38</sup> Center for Climate and Energy Solutions. Energy Efficiency Standards and Targets. November 11, 2016. Webpage: <http://www.c2es.org/us-states-regions/policy-maps/energy-efficiency-standards>. Pennsylvania: Alternative Energy Portfolio Standards Act, 2004 Act 213; Connecticut: Conn. Gen. Stat. §16-245a et seq.; Nevada: Assembly Bill 3 of 2005;

federal level, energy efficiency is recognized as a compliance mechanism<sup>39</sup> towards air quality programs under the Clean Air Act<sup>40</sup>, including the National Ambient Air Quality Standards program (NAAQS), the Title IV Acid Rain Trading Program, the NOx SIP Call (NOx Budget Trading Program), and New Source Review.<sup>41</sup>

In Midwestern states where EERS are in place, jurisdictions typically verify compliance by requiring that regulated entities report planned or actual savings from the energy efficiency programs they administer.<sup>42</sup> In the context of broader portfolio standards and emissions trading programs, certain jurisdictions also permit or require regulated entities to use tradable instruments to demonstrate compliance.<sup>43</sup> Renewable energy certificates (RECs) are an example of a tradable instrument: a REC represents contractual rights to the environmental benefits<sup>44</sup> of one megawatt-hour of generation from renewable resources.<sup>45</sup> RECs are used to track renewable electricity from the point of generation to the consumer, and can, in general, be bundled or unbundled with the underlying electricity.<sup>46</sup> Similarly, energy efficiency credits (EECs)<sup>47</sup> typically represent the environmental benefits of one megawatt-hour (MWh) of energy savings from an energy efficiency project.<sup>48</sup> Tradable instruments (such as EECs) may also be bought and used by voluntary market participants, who seek to substantiate voluntary targets or marketing claims.<sup>49</sup> This report will hereafter refer to tradable instruments as “credits,” but note that terminology used to describe tradable instruments varies widely, depending on the compliance or voluntary program those instruments are used towards.<sup>50</sup>

A jurisdiction (or the regulatory agency designated by the jurisdiction) administering a compliance program may, through legislative or regulatory action, establish a process,

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New York: Public Service Commission Order Authorizing the Clean Energy Fund Framework, Cases 14-M-0094 et al., Jan. 21, 2016; Michigan: Clean, Renewable, and Efficient Energy Act (2008 Public Act 295).

<sup>39</sup> See EPA, Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans. July 2012. PDF File: [https://www.epa.gov/sites/production/files/2016-05/documents/eeermanual\\_0.pdf](https://www.epa.gov/sites/production/files/2016-05/documents/eeermanual_0.pdf).

<sup>40</sup> 42 U.S.C. § 7401 et seq.

<sup>41</sup> Tarr, J., Hayes, S., and Monast, J. Energy Efficiency and Greenhouse Gas Limits for Existing Power Plants: Learning from EPA Precedent. Nicholas Center for Environmental Policy Solutions. June 2013.

<sup>42</sup> Midwest Energy Efficiency Alliance Policy Tracking.

<sup>43</sup> Midwest Energy Efficiency Alliance Policy Tracking.

<sup>44</sup> These “environmental benefits” are sometimes referred to as “attributes”: the characteristics of electricity supply such as the energy source and emissions from a generator. Holt, E. and Wiser, R. Lawrence Berkeley National Laboratory. The Treatment of Renewable Energy Certificates, Emissions Allowances, and Green Power Programs in State Renewables Portfolio Standards. April 2007.

<sup>45</sup> National Renewable Energy Laboratory (NREL). Renewable Electricity: How do you know you are using it? NREL/FS-6A-20-64558. August 2015. PDF File: <http://www.nrel.gov/docs/fy15osti/64558.pdf>.

<sup>46</sup> Id. While a majority of states allow electricity to be “unbundled” from its attributes, a minority of states require that attributes be conveyed with the underlying electricity (“bundled RECs”). Holt, E. and Wiser, R. Ernest Orlando Lawrence Berkeley National Laboratory. The Treatment of Renewable Energy Certificates, Emissions Allowances, and Green Power Programs in State Renewables Portfolio Standards. April 2007.

<sup>47</sup> EECs are also known as energy efficiency certificates, energy savings certificates, white certificates, tradable white certificates, or White Tags®. World Resource Institute. The Bottom Line on Energy Savings Certificates. Issue 10. October 2008. PDF File: [http://www.wri.org/sites/default/files/pdf/bottom\\_line\\_energy\\_savings\\_certificates.pdf](http://www.wri.org/sites/default/files/pdf/bottom_line_energy_savings_certificates.pdf)

<sup>48</sup> Id.

<sup>49</sup> Under FTC regulation, for example, a marketer may not represent that a product or package is made with renewable energy if fossil fuel, or electricity derived from fossil fuel, is used to manufacture any part of the advertised item - unless the marketer has matched such non-renewable energy use with the purchase of RECs. 16 C.F.R. § 260.15(a). See also NREL. Renewable Electricity: How do you know you are using it? NREL/FS-6A-20-64558. August 2015. PDF File: <http://www.nrel.gov/docs/fy15osti/64558.pdf>.

<sup>50</sup> Credits used towards emission reduction programs, for example, might be known as “allowances” and correspond to one ton of emissions. Credit used towards portfolio standards, for example, might be known as “certificates” and correspond to one MWh of energy generation or savings.

standards and infrastructure for issuing credits to eligible projects such that credits may be used by regulated entities towards compliance.<sup>51</sup> This might include establishing:

- Project eligibility requirements;
- Project application review and credit issuance infrastructure;
- Project application and registration process;
- Requirements for data reporting;
- Requirements for EM&V; and,
- Systems for credit issuance, tracking and retirement.

Jurisdictions administering compliance programs might, in some cases, rely on third-party entities (TPE) to assist in developing and managing the processes/infrastructure listed above.<sup>52</sup> For example, TPEs issue credits for greenhouse gas (GHG) offset projects as a part of the emissions trading programs implemented by California and the Regional Greenhouse Gas Initiative (RGGI), and issue RECs as a part of several renewable portfolio standard (RPS) programs.<sup>53</sup>

Table 1 on the following page summarizes examples of processes and standards established by jurisdictions in order to qualify energy efficiency projects for credits under existing compliance programs.

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<sup>51</sup> See, e.g., 40 C.F.R. § 73.1-73.90 (EPA regulations regarding Sulfur Dioxide Allowance System under the Acid Rain Program); Minn. Stat. §216B.1691 Subd. 4 (State of Minnesota statute regarding Renewable energy credits under Minnesota Renewable Energy Standard). Similarly, standards and processes for the issuance of credits sold to voluntary market participants are established by independent certification and verification bodies, such as the Center for Resource Solutions. Center for Resource Solutions. Green-e programs. November 12, 2016. Webpage: <http://www.green-e.org/getcert.shtml>.

<sup>52</sup> Danish, K., Fink H., and Zevin A. Use of "Third Party Entities" for State and Federal Implementation of the Clean Power Plan: Issues and Options. July 27, 2016.

<sup>53</sup> Id. at pp 2-3.

**Table 1: Examples of existing compliance programs under which energy efficiency projects are eligible for credits**

	Pennsylvania <sup>54</sup>	North Carolina <sup>55</sup>	U.S. EPA / Missouri Example <sup>56</sup>
<b>Compliance Program</b>	Pennsylvania Alternative Energy Portfolio Standard (AEPS) <sup>57</sup>	North Carolina Renewable Energy and Energy Efficiency Portfolio Standard (REPS) <sup>58</sup>	Clean Air Interstate Rule
<b>Credit</b>	Tier II Alternative Energy Credit	Energy Efficiency Credit <sup>59</sup>	Allowance
<b>Eligible EE Projects</b>	Standard measures as listed in the Pennsylvania Technical Reference Manual. Custom measures qualified on a case-by-case basis. <sup>60</sup>	Any energy efficiency measure including combined heat and power systems. <sup>61</sup>	Determined by state creating a set-aside of allowances for energy efficiency. In Missouri, the state energy office allowed a range of energy efficiency projects to claim credits from their state CAIR energy efficiency set-aside, including lighting technologies, HVAC and refrigeration technologies, and motors. <sup>62</sup>
<b>Credit Application Process</b>	Providers apply to Pennsylvania Program Administrator (PA) for state certification number. PA creates a schedule of AEC production for the lifetime of project.	Providers directly self-report data through a Self-Reporting Interface: an internet-based data entry portal that	Determined by state creating a set-aside of allowances for energy efficiency. In Missouri, project applicants must first undergo a pre-application project review in order to “prevent misunderstanding of project eligibility or project

<sup>54</sup> Quilliam, K. InClima Solutions. Electronic communication. October 28, 2016.

<sup>55</sup> North Carolina Utilities Commission. Renewable Energy and Energy Efficiency Portfolio Standard (REPS). November 15, 2016. Webpage: <http://www.ncuc.commerce.state.nc.us/reps/reps.htm>.

<sup>56</sup> Under EPA’s Clean Air Interstate Rule (CAIR) (which was replaced by the Cross State Air Pollution Rule (CSAPR) effective January 1, 2015), several eastern states are required to reduce SO<sub>2</sub> and NO<sub>x</sub> emissions in order to reduce air pollution moving across state boundaries. States affected by these regulatory programs may meet requirements by implementing cap-and-trade programs centered on the allocation and trading of allowances. Under these cap-and-trade programs, states may set aside quantities of allowances for energy efficiency or renewable energy projects (EE/RE set-aside). States creating allowance set-asides have established processes and standards for projects to apply for and receive allowances from the set-aside. Missouri is an example of a state that established an EE/RE set-aside under CAIR. This set-aside became inactive effective January 1, 2015. Missouri Department of Economic Development Division of Energy. Energy Efficiency & Renewable Energy (EE/RE CAIR Annual NO<sub>x</sub> Set-aside. Under the CAIR Annual NO<sub>x</sub> Trading Program in Missouri. Guide for Applicants. January 2014. PDF File: [https://energy.mo.gov/energy/docs/CAIRsetaside-guide\\_Jan%202014\\_Final.pdf](https://energy.mo.gov/energy/docs/CAIRsetaside-guide_Jan%202014_Final.pdf).

<sup>57</sup> 73 P.S. § 1648.1 et seq. (“Act 213”), requires utilities to generate 8% of their electricity by using “Tier I” energy resources and 10% of their electricity using “Tier II” energy resources by 2021. Tier II energy resources include “energy efficiency technologies, management practices, or other strategies in residential, commercial, institutional or government customers that reduce electricity consumption by those customers.” 73 P.S. § 1648.2.

<sup>58</sup> N.C. Gen. Stat. § 62-133.8.

<sup>59</sup> NC-RETS. North Carolina Renewable Energy Tracking System Operating Procedures. January 31, 2011.

<sup>60</sup> Pennsylvania Public Utilities Commission. Implementation of the Alternative Energy Portfolio Standards Act of 2004: Standards for the Participation of Demand Side Management Resources. Docket No. M-00051865. Sept. 29, 2005.

<sup>61</sup> North Carolina Utility Commission Rule R8-67.

<sup>62</sup> Missouri Department of Economic Development Division of Energy. Energy Efficiency & Renewable Energy. EE/RE CAIR Annual NO<sub>x</sub> Set-aside. Under the CAIR Annual NO<sub>x</sub> Trading Program in Missouri. Guide for Applicants. January 2014. PDF File: [https://energy.mo.gov/energy/docs/CAIRsetaside-guide\\_Jan%202014\\_Final.pdf](https://energy.mo.gov/energy/docs/CAIRsetaside-guide_Jan%202014_Final.pdf).

Credit Application Process (cont'd)		communicates dynamic data to the administrator of a credit tracking system. <sup>63</sup>	measurement and verification requirements.” Following this, the project sponsor must apply to the Division of Energy for allowances.
M&V Req't	The measurement of savings from standard energy savings measures is based on deemed savings values as detailed in the Pennsylvania Technical Reference Manual. <sup>64</sup> For custom measures, applicants must submit a proposed evaluation plan and supporting documentation. The Pennsylvania PUC does not specify guidelines for the particular M&V methodology that project applicants must employ to determine savings from custom measures.	Provider retains work papers for audit demonstrating how it calculated the amount of credits to be created. Must detail the estimated volume of customer participation and related energy savings, adjustments for actual operating results (participation and savings rates) and the findings of measurement and verification analyses. <sup>65</sup>	Determined by state creating a set-aside of allowances for energy efficiency. In Missouri, M&V requirements are established in the Division of Energy’s Energy Efficiency & Renewable Energy (EE/RE) CAIR Annual NOx Set-Aside Guide for Applicants. <sup>66</sup> The guide recommends that project sponsors base their M&V methodology on an accepted M&V protocol or guidance document, including IPMVP, U.S. DOE’s M&V Guidelines for Federal Energy Projects, New Jersey’s Clean Energy Program Protocols, and ASHRAE Guideline 14-2002 for Measurement of Energy and Demand Savings. <sup>67</sup>

<sup>63</sup> NC-RETS. North Carolina Renewable Energy Tracking System Operating Procedures. January 31, 2011.

<sup>64</sup> Pennsylvania Public Utilities Commission. Technical Reference Manual, June 2016.

<sup>65</sup> Id.

<sup>66</sup> Missouri Department of Economic Development Division of Energy. Energy Efficiency & Renewable Energy. EE/RE CAIR Annual NOx Set-aside. Under the CAIR Annual NOx Trading Program in Missouri. Guide for Applicants. January 2014. PDF File: [https://energy.mo.gov/energy/docs/CAIRsetaside-guide\\_Jan%202014\\_Final.pdf](https://energy.mo.gov/energy/docs/CAIRsetaside-guide_Jan%202014_Final.pdf).

<sup>67</sup> Id.

Table 2 below summarizes the design and implementation of four examples of credit tracking systems that currently issue, manage and retire credits for energy efficiency projects.<sup>68</sup> We use the term “credit tracking systems” to describe systems used to issue, manage and retire credits used for either voluntary or compliance purposes; however, these systems are also known variously as “certificate tracking systems” or “registries.”<sup>69</sup> Credit tracking systems are typically electronic databases that support multiple users and allow market participants to manage their own credit accounts.<sup>70</sup> They work in conjunction with compliance or voluntary credit regimes; issuing credits to projects that have met requirements established by a jurisdiction or, in the case of voluntary credits, an independent certification and verification agency. Credit tracking systems ensure that each issued credit is counted only once by assigning a unique serial number to each credit issued.<sup>71</sup> They also facilitate the retirement of credits once the credit is used towards meeting a compliance obligation, to support a marketing claim, or to meet a sustainability objective. Without the use of credit tracking systems, purchasers of credits would have to rely solely on contract audits and paper attestations in order to ensure that credits are not double-counted.<sup>72</sup>

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<sup>68</sup> Our review of existing credit tracking systems included a review of nine regional tracking systems roughly mapping to territory managed by Regional Transmission Organizations (Texas Renewable Energy Credit Program, NEPOOL-Generation Information System, PJM-Generation Attribute Tracking System, Western Renewable Energy Generation Information System, Midwest Renewable Energy Tracking System, North American Renewables Registry, Michigan Renewable Energy Certification System, Nevada Tracks Renewable Energy, and North Carolina Renewable Energy Tracking System); carbon offset project registries (American Carbon Registry, Climate Action Reserve, Verified Carbon Standard), and EPA’s Allowance Management System. Although other credit tracking systems used by private and public entities likely exist, our review was limited to the tracking systems above due to their prominence, their relevance to the Commonwealth of Kentucky, the availability of literature describing these systems, and the fact that a number of these systems create, manage and retire credits for energy efficiency projects.

<sup>69</sup> U.S. Department of Energy. Office of Energy Efficiency & Renewable Energy. Renewable Energy Certificates (RECs) National REC Tracking Systems. November 11, 2016. Webpage:

<http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=3>. While some parties use the terms “tracking system” and “registry” interchangeably, in the interest of clarity this report uses the term “credit tracking system” consistently to refer to electronic systems that create, manage and retire credits.

<sup>70</sup> Holt, E. and Wiser, R. Lawrence Berkeley National Laboratory. The Treatment of Renewable Energy Certificates, Emissions Allowances, and Green Power Programs in State Renewables Portfolio Standards. April 2007.

<sup>71</sup> NREL. Renewable Electricity: How do you know you are using it? NREL/FS-6A-20-64558. August 2015. PDF File: <http://www.nrel.gov/docs/fy15osti/64558.pdf>.

<sup>72</sup> Id.

**Table 2: Credit Tracking Systems and Energy Efficiency Projects**

	<b>PJM Generation Attribute Tracking System (PJM-GATS)</b>	<b>North Carolina Renewable Energy Tracking System (NC-RETS)</b>	<b>EPA Allowance Management System (AMS)</b>	<b>American Carbon Registry (ACR)</b>
<b>Administrator</b>	PJM Environmental Information Services (TPE)	APX (TPE selected by North Carolina Utilities Commission)	U.S. EPA	Winrock International (TPE)
<b>Accounts</b>	Energy efficiency providers or their agents may hold accounts in PJM-GATS. In general, accounts may be held by electric utilities, brokers and aggregators, generators and third-party reporters. <sup>73</sup>	Energy efficiency providers or their agents may hold accounts in NC-RETS. In general, accounts may be held by any party wishing to own or track credits in NC-RETS. <sup>74</sup>	Energy efficiency providers or their agents may hold accounts in the EPA AMS. In general, any person, company, or organization may hold an account for the purpose of holding and transferring allowances. <sup>75</sup>	Energy efficiency projects developers, or non-project developers such as traders, marketers, end-use customers, or verifiers. In general, project developers, traders, marketers and verifiers may hold accounts in ACR, but individuals may not. <sup>76</sup>
<b>Account Architecture</b>	Each account automatically contains four subaccounts: active subaccount, Clean Energy Portfolio Standard subaccount, load serving entity subaccount, reserve subaccount. <sup>77</sup>	Four account types: electric power supplier, general, qualified reporting entity, and program auditor. Four sub-accounts: active, retirement, export and compliance. <sup>78</sup>	General accounts are held by any person, company or organization. Compliance accounts are established by the EPA for regulated entities.	Four types of accounts: Project Developer, Transaction, Corporate and Verifier. Each ACR account includes a default Retirement sub-account and a default Active sub-account. <sup>79</sup>
<b>Data Reporting</b>	Applicant energy efficiency providers report data to the Pennsylvania Program Administrator (PA). PA transmits data on number of credits to be created to PJM-GATS. <sup>80</sup>	Energy efficiency providers directly self-report data through a Self-Reporting Interface: an internet-based data entry portal that communicates dynamic data to the NC-RETS Administrator. <sup>81</sup>	Data reported through the Clean Air Markets Data Business System.	Data is entered into the electronic ACR system by the project proponent. <sup>82</sup>

<sup>73</sup> PJM Environmental Information Services (PJM EIS). Generation Attribute Tracking System (GATS) Operating Rules. Rev. 8. May 2014.

<sup>74</sup> NC-RETS. North Carolina Renewable Energy Tracking System Operating Procedures. January 31, 2011.

<sup>75</sup> EPA. Clean Air Markets – Allowance Markets. November 15, 2016. Webpage: <https://www.epa.gov/airmarkets/clean-air-markets-allowance-markets#General>.

<sup>76</sup> Patney, Arjun. Winrock International. Electronic communication. November 4, 2016.

<sup>77</sup> PJM EIS. Generation Attribute Tracking System (GATS) Operating Rules. Rev. 8. May 2014.

<sup>78</sup> NC-RETS. North Carolina Renewable Energy Tracking System Operating Procedures. January 31, 2011.

<sup>79</sup> American Carbon Registry. Operating Procedures. April 2015.

<sup>80</sup> Quilliam, K. InClima Solutions. Electronic communication. October 28, 2016.

	PJM Generation Attribute Tracking System (PJM-GATS)	North Carolina Renewable Energy Tracking System (NC-RETS)	EPA Allowance Management System (AMS)	American Carbon Registry (ACR)
<b>Credits Issued</b>	Credits issued by PJM-GATS are known generically as Certificates. <sup>83</sup> If the participating project is eligible for a state compliance program and receives a state certification number from the corresponding state, the terminology used for the Certificate may vary.	Renewable Energy Credits (RECs) and Energy Efficiency Credits (EECs). <sup>84</sup>	Allowances under the Acid Rain Program, Transport Rule NOx Annual Program, Transport Rule NOx Ozone Season Program, Transport Rule SO <sub>2</sub> Annual Group 1 Program, and the Transport Rule SO <sub>2</sub> Annual Group 2 Program. <sup>85</sup>	Offset credits used towards the California cap-and-trade compliance market, Washington Clean Air Rule, and voluntary markets.

The credit tracking systems described in Table 2 are not dedicated exclusively to issuing, managing and retiring energy efficiency credits. In contrast, the National Energy Efficiency Registry (NEER) is currently being developed<sup>86</sup> as a credit tracking system exclusively for electricity savings from energy efficiency projects. The NEER is being designed to be flexible such that it can serve as a TPE credit tracking system for multiple “client jurisdictions” administering compliance programs.<sup>87</sup> The NEER is currently in development, and therefore several key design and implementation issues remain only partially-addressed at the time of writing of this report. Table 3 below summarizes the manner in which the NEER is anticipated to address key design and implementation issues.

<sup>81</sup> NC-RETS. North Carolina Renewable Energy Tracking System Operating Procedures. January 31, 2011.

<sup>82</sup> American Carbon Registry. Operating Procedures. April 2015.

<sup>83</sup> PJM EIS. Generation Attribute Tracking System (GATS) Operating Rules. Rev. 8. May 2014.

<sup>84</sup> NC-RETS. North Carolina Renewable Energy Tracking System Operating Procedures. January 31, 2011.

<sup>85</sup> EPA. Clean Air Markets – Allowance Markets. November 15, 2016. Webpage: <https://www.epa.gov/airmarkets/clean-air-markets-allowance-markets#General>.

<sup>86</sup> The NEER platform is being developed in partnership by Tennessee, Georgia, Michigan, Minnesota, Oregon, Pennsylvania, and partners The Climate Registry (TCR) (with support from E4TheFuture and APX) and the National Association of State Energy Officials (NASEO) under a competitive funding award from the U.S. Department of Energy.

<sup>87</sup> Kellen, P. The Climate Registry (TCR). Electronic communication. November 7, 2016. Jurisdictions would use the NEER as a TPE to issue, manage, and track credits by entering into an agreement with the NEER.

Table 3: National Energy Efficiency Registry (in development)

National Energy Efficiency Registry (NEER) <sup>88</sup> (in development)	
<b>Administrator</b>	The NEER (TPE)
<b>Accounts</b>	Accounts in the NEER would be held by energy efficiency providers (utilities, ESCOs, or other), compliance entities, voluntary buyers, brokers, jurisdictions, compliance program administrators, accredited independent verifiers, and any other qualified reporting entities.
<b>Account Architecture</b>	The NEER would include three account types: a General Account, an Asset-only Account, and a Restricted Account. Whereas a General Account would support all functionality, an Asset-only Account would only be associated with a single asset, and would not have the ability to receive, import or hold instruments associated with other assets. Restricted Accounts would be used by Verifiers and Jurisdictions, in order to monitor, approve, and verify data. Each Account would automatically include two sub-accounts; an active sub-account and a retirement sub-account.
<b>Projects Registered</b>	Utility-funded, publicly-funded, and privately funded energy efficiency projects. This would include, but not be limited to: investor-owned utility (IOU) and public power ratepayer-funded programs, property-assessed clean energy (PACE) funded initiatives, energy service contracts and privately funded investments. The NEER would also register aggregations of projects, programs or measures as single resources.
<b>Project Output</b>	At this time, the NEER's operating rules address only the MWh of energy savings (avoided electric energy use) produced by registered energy efficiency projects. However, the NEER aims to expand functionality to also consider other project outputs, potentially including avoided water, capacity, fossil resources, and emissions.
<b>Data Reporting</b>	The NEER Account Holders would electronically submit data on the MWh of energy savings produced by registered energy efficiency projects to the NEER Administrator in a format defined by the Administrator. The Administrator would upload this data into an Asset Output Log.

(continued on page 18)

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<sup>88</sup> Id.

National Energy Efficiency Registry (continued)

<p><b>M&amp;V Requirements</b></p>	<p>NEER would require that project output undergo a Quality Assurance/Quality Control (QA/QC) protocol before it will issue any credit. Account holders would elect a QA/QC protocol from the following three options: NEER Basic, NEER Enhanced, or a Specific Compliance/Certification Program (SCCP) requirement. The QA/QC protocol chosen determines the type of credit that the NEER would issue for the corresponding unit of project output, and accordingly, would affect the markets in which those credits may be traded or may participate.</p> <p>Under the NEER Basic protocol, the provider would not be required to file an EM&amp;V plan or conduct any third-party verification of data. No credits would be issued to providers undergoing the NEER Basic QA/QC protocol. NEER Enhanced requires an EM&amp;V plan submitted at the time of project registration and third-party verification of data. The minimum EM&amp;V required under NEER Enhanced is defined as the EM&amp;V requirements under the EPA’s Clean Power Plan (CPP) and consistent with the EPA guidance released with the CPP<sup>89</sup>, including the EPA’s Proposed Federal Plan for the CPP and the Model Trading Rule<sup>90</sup>. For example, where states designate the NEER to issue Emission Rate Credits (ERC) on their behalf using NEER Enhanced, an account holder electing the NEER Enhanced option would receive ERCs eligible for use towards compliance with the CPP. The SCCP protocol would be specified by a jurisdiction administering a compliance program such as an Energy Efficiency Resource Standard. The jurisdiction may establish specific EM&amp;V requirements in order for project output to be considered eligible for credits that may be used towards compliance with the compliance program. Thus, an account holder electing the SCCP protocol established by a jurisdiction would receive instruments eligible for use towards compliance with the compliance program administered by that jurisdiction.</p>
<p><b>Credits</b></p>	<p>For the same unit of project output, the NEER would have the functionality to issue a credit that is compatible with a jurisdiction’s compliance program, as well as a “NEER Certificate” that documents all non-energy attributes associated with that unit of project output. For example, for the same unit of output from a registered energy efficiency project, the NEER might create an Energy Efficiency Credit that could be retired towards a state portfolio standard, as well as a NEER Certificate. NEER plans to avoid the double-counting of attributes through transparent reporting practices and rigorous chain of custody tracking.</p> <p>Each credit issued by the NEER would have a unique serial number, and include asset information, commence operation information, asset output vintage, QA/QC protocol code, the measurement and verification type used, disclosure of accredited independent verifier and qualified reporting entity, eligibility for SCCPs, a project type, technology type, and any emissions associated with the asset output.</p>

<sup>89</sup> EPA. Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy Efficiency. Draft for Public Input. August 3, 2015.

<sup>90</sup> 80 Fed. Reg. 64,966 et seq.

Once a credit tracking system issues a credit to a market participant, that credit is typically deposited in the market participant's account within the credit tracking system. Market participants may choose to hold the credit in their account, retire the credit for any purpose, or trade the credit to other market participants. In some cases, credit tracking systems facilitate trading by maintaining a public forum where prospective buyers and sellers of credits can post information about credits they would like to sell or purchase.<sup>91</sup> These forums; however, are generally responsible for a small percentage of credit trades.<sup>92</sup> More often, bilateral transactions and payments for credits are handled by brokers or aggregators, and occur on privately-operated exchanges.<sup>93</sup> Once a trade has been confirmed by contracting parties, credit tracking systems facilitate the transfer of credits between accounts.<sup>94</sup>

## Considerations for Kentucky

Based on our review of energy efficiency tracking protocols and systems, as well as energy efficiency credit tracking protocols and systems, we identify the following actions should the Commonwealth of Kentucky decide to pursue energy efficiency tracking to better understand energy efficiency as a resource or participate in existing or future compliance program.

- 1) Consider implementing more sophisticated energy efficiency tracking practices to increase industry transparency and understanding of energy efficiency as a resource.
- 2) Consider establishing processes and standards to allow energy efficiency to receive credits under existing or future compliance programs.
- 3) Consider leveraging an existing credit tracking system to create, manage and retire energy efficiency credits.

### *1) Consider implementing energy efficiency tracking practices to increase industry transparency and understanding of energy efficiency as a resource.*

As discussed in Advanced Energy Tracking (above), energy efficiency tracking practices in Kentucky might be improved by: broadening coverage of DEDI's data collection effort to record standardized project- or measure-level metrics<sup>95</sup>, including energy efficiency projects implemented by non-regulated utilities, privately-funded energy efficiency projects, ESPC projects facilities, or projects implemented by community action agencies; and creating standards for measurement and verification of project impacts.

These practices would allow the Commonwealth of Kentucky to better characterize its energy efficiency resource. The implementation of a formal energy efficiency database that tracks energy efficiency occurring through and beyond ratepayer-funded programs would also allow Kentucky to respond nimbly to future state or federal legislation or regulation requiring or promoting standardized tracking of energy efficiency programs. Should Kentucky choose to implement a formal tracking system, a data management professional should be consulted to evaluate the type of software solution that would fit the Commonwealth's needs, and consider

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<sup>91</sup> Quilliam, Kevin. InClima Solutions. Electronic communication. October 28, 2016.

<sup>92</sup> Id.

<sup>93</sup> Id.

<sup>94</sup> See, e.g. PJM Generation Attribute Tracking System (PJM-GATS) Operating Rules, rev. 8, Section 10. May 2014.

<sup>95</sup> Kentucky may consider standardized reporting forms developed by the Northeast Energy Efficiency Partnerships (NEEP).

licensing an existing energy efficiency tracking software solution in order to minimize development costs.

### *2) Consider establishing processes and standards that would allow energy efficiency to receive credits under existing or future compliance programs.*

Kentucky may consider establishing processes and standards that would allow the incorporation of energy efficiency into the Commonwealth's compliance with EPA air quality programs.

The EPA has published guidance<sup>96</sup> for states seeking to claim emission reductions from energy efficiency (and renewable energy) towards compliance with federal air quality regulations, such as NAAQS, the NOx Budget Trading Program, or the CPP. In order to award energy efficiency projects allowances that may be used towards the EPA's NOx Budget Trading Program,<sup>97</sup> for example, states must submit an initial State Implementation Plan (SIP) identifying an intent to include a set aside of allowances for energy efficiency, and the size of the state's intended set-aside. Next, the state would need to decide:

- Which state office(s) will administer the allowances from a set-aside?
- What information is needed from program participants to apply for set-aside allowances, and how will it be collected?
- What protocols will the state use to measure and verify eligible projects?
- How will the NOx emissions associated with the energy saved/displaced be determined?
- When and how will states inform EPA about the set-aside allowance claims?

Similarly, under the CPP, states seeking to use energy efficiency as an emission reduction measure are required to establish protocols for quantifying and verifying savings from energy efficiency projects, as well as eligibility requirements and procedures for awarding credits to energy efficiency projects.<sup>98</sup>

### *3) Consider leveraging an existing credit tracking system administered by a TPE to create, manage and retire energy efficiency credits.*

Should Kentucky establish processes and standards for delivering credits to energy efficiency projects, the Commonwealth might consider leveraging an existing credit tracking system administered by a TPE to create, manage, and retire credits. For example, Kentucky may designate a credit tracking system such as the NEER in order to issue Emission Rate Credits on the state's behalf under the CPP, or other credits under a future federal emissions trading program. In this scenario, the Commonwealth would have to enter into an agreement for the NEER services, which may include a contract for the use of the tracking system. As a contracted "Client Jurisdiction", Kentucky may create its own data M&V and reporting standards and

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<sup>96</sup> See, e.g., EPA. "Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans." EPA-456/D-12-001a. July 2012.

<sup>97</sup> EPA. "Creating an Energy Efficiency and Renewable Energy (EE/RE) Set-Aside in the NOx Budget Trading Program: Establishing a Set-Aside." (March 1999); "Creating an Energy Efficiency and Renewable Energy (EE/RE) Set-Aside in the NOx Budget Trading Program: Designing the Administrative and Quantitative Elements". (April 2000); "Creating an Energy Efficiency and Renewable Energy (EE/RE) Set-Aside in the NOx Budget Trading Program: Measuring and Verifying Electricity Savings." (July 2007) EPA-430-K-00-004.

<sup>98</sup> EPA. Fact Sheet: Energy Efficiency in the Clean Power Plan. October 2015. PDF File: <https://www.epa.gov/sites/production/files/2015-08/documents/fs-cpp-ee.pdf>.

corresponding QA/QC protocol for Kentucky energy efficiency providers to select upon registration (as described in Recommendation 2), or defer to the NEER Enhanced QA/QC protocol if it did not want to create its own set of M&V or reporting protocols.

Kentucky may choose, in the alternative, to develop its own proprietary credit tracking system instead of leveraging an existing credit tracking system administered by a TPE. In this scenario, the Commonwealth would confront a series of decision points. Kentucky's choices at these decision points – whether made through statute, regulation, or a collaborative stakeholder process – will inform the protocols guiding the design and implementation of a Kentucky energy efficiency registry.

- **Decision Point 1:** Who will administer the credit tracking system? Are there resources to develop/maintain/administer the system?
- **Decision Point 2:** Which entities should be permitted to hold accounts in the credit tracking system?
- **Decision Point 3:** How should account architecture in the credit tracking system be designed?
- **Decision Point 4:** How should project output data be reported to the credit tracking system?
- **Decision Point 5:** What credits will the credit tracking system issue?

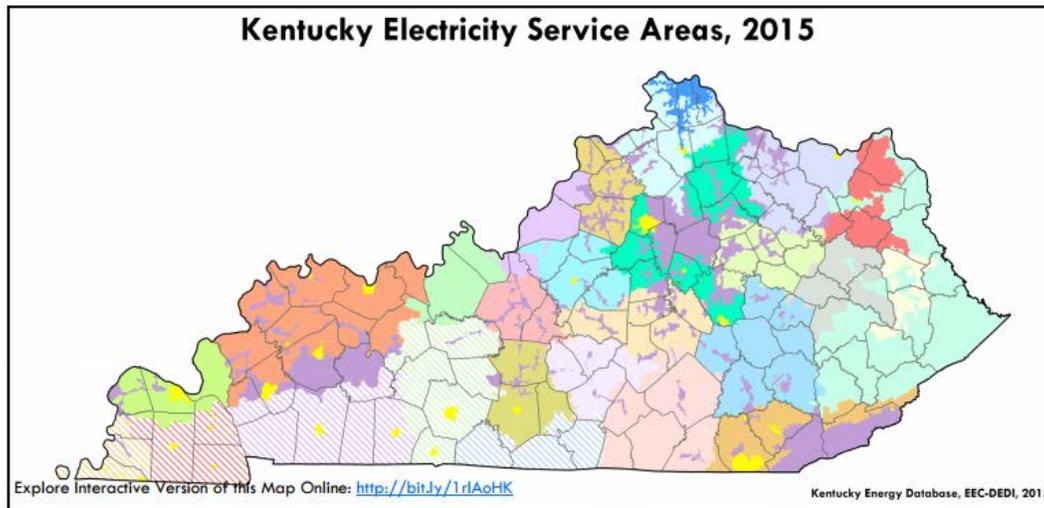
Should Kentucky choose to develop its own energy efficiency credit tracking system, the Commonwealth might consider as a model the draft Operating Rules and Procedures for the National Energy Efficiency Registry, which are currently in development.

While the actions identified above may help the Commonwealth of Kentucky better understand energy efficiency as a resource or participate in existing or future compliance programs, they may each involve significant legal or policy considerations. Feedback from the PSC, utilities, and other key stakeholders may help inform appropriate steps forward for Kentucky, should the Commonwealth choose to pursue any or all of these actions.

## Appendix

### Map of Kentucky Electric Service Areas, 2015

The Commonwealth of Kentucky is divided into electric service areas.<sup>99</sup> Within these service areas, electricity service and delivery is restricted to one electricity provider per area.<sup>100</sup> Providers of electricity in Kentucky are either investor-owned utilities (IOU), municipal utilities, electric cooperative corporations (ECC) or rural electric cooperative corporations (RECC).<sup>101</sup> The Kentucky PSC does not regulate municipal utilities or distributors of the Tennessee Valley Authority (TVA).<sup>102</sup>



All Municipal Utilities		Kentucky Utilities*	
Big Sandy RECC†		Licking Valley RECC†	
Blue Grass ECC†		Louisville Gas & Electric*	
Clark ECC†		Meade County RECC‡	
Cumberland Valley RECC†		Nolin RECC†	
Duke Energy Kentucky*		Owen ECC†	
Farmers RECC†		Pennyrite RECC§	
Fleming-Mason ECC†		Salt River ECC†	
Grayson RECC†		Shelby ECC†	
Hickman-Fulton Counties RECC§		South Kentucky RECC†	
Inter-County ECC†		Taylor County RECC†	
Jackson ECC†		Tri-County Electric Member Corporation§	
Jackson Purchase Energy Corporation ‡		Warren RECC§	
Kenergy Corporation‡		West Kentucky RECC§	
Kentucky Power*			

\*Investor-Owned Utilities  
 †EKPC Owner-Member Cooperative  
 ‡BREC Member Cooperative  
 §TVA Distributor

<sup>99</sup> Ky. Rev. Stat. § 278.016.

<sup>100</sup> Energy and Environment Cabinet, Kentucky Department for Energy Development and Independence. "Kentucky Energy Profile 2015." 5<sup>th</sup> ed., p.22. 2015.

<sup>101</sup> Id.

<sup>102</sup> Id.