BDC Presents: Democratizing Access to Incentive Data Nationwide

May 30, 2024

Summary:

The National Open Data for Electrification (NODE) Collective is a nonprofit alliance creating the most comprehensive and up-to-date open data repository of every residential electrification incentive program in the nation, with plans to make the resource open and accessible to all. Join this webinar to hear from NODE's founding organizations – Eli Technologies, Building Decarbonization Coalition (BDC), Rewiring America, North Carolina Clean Energy Technology Center, and RMI – about the progress to date, the NODE Collective roadmap, and how this initiative can spur market innovation and make residential electrification more affordable for consumers.

Resources:
- **Recording**
- **Slides**
- **NODE Collective**, **NODE List Serve**, **NODE Wiki**, **NODE Press Release**
- **BDC newsletter sign up**

NODE Member Organizations' Existing Resources:
- BDC Blog: **How to Democratize Access to Electrification Incentive Data**
- NCCETC's **Database of State Incentives for Renewables and Efficiency (DSIRE)**
- Eli's **Contractor Tools**, **Incentive Estimator**
- Rewiring America's **Savings Calculator**, **API**, **Personal Electrification Planner**
- RMI's **Green Upgrade Calculator**
- BDC's **The Switch Is On** and **Incentive Finder**

Events:
- **California Policy Call**: Jun 18th, 10am PT / 1pm ET

Summary

The Current Landscape of Incentives
- It is estimated that there are more than 5,000 electrification and energy efficiency incentives in the United States, which are always changing. Eligibility requirements can differ by program, geographic coverage, technology specs, and income qualification requirements.
- All the organizations participating in the NODE Collective were working on creating their own database of electrification incentives to support their research and found that incentive program data lives on multiple websites, databases, PDF files, program handbooks, and other sources. It was also clear that many organizations and groups from retailers to municipalities saw this as a barrier to creating tools and resources to make electrification incentives easier to understand and more

accessible for consumers and contractors. This task was too large for one organization, so they created a collective.

What is the NODE Collective?
- The National Open Data for Electrification (NODE) Collective is a nonprofit alliance dedicated to sourcing, structuring, and maintaining comprehensive data on every residential electrification incentive program in the U.S.

Node Collective's Data Design
- Creating a unified database with accurate data brings three main challenges
  - Source: finding all of the data
  - Structure: organizing the data into one structure that can support many applications
  - Maintain: keeping the data relevant and up to date as these programs evolve and change
- Currently, NODE has five tables of information to represent incentives in a flexible way (see more on slide 12)
  - Incentives: the core piece of information
  - Programs: where incentives originate from
  - Authorities: where programs originate from
  - Areas: an incentive has one or more areas that describe the geographic characteristics of that incentive
  - Amount configuration: how much the incentive will cover (can handle flat rates, percentage-based, and relative amount of money based on an underlying characteristic)
- Each incentive will have a source URL to allow users to trace to the source.
- With all of the hard work done so far to create a flexible data design, many challenges remain
  - Many more voices need to be represented in the NODE collective
  - Inconsistent representations of the data
  - Establish a process for data maintenance

Ways to get involved
- Provide feedback once the schema is available
  - Join NODE List Serve in the meantime
  - Follow NODE's Wiki
- Provide financial support
- Join our monthly NODE Spark Session (next meeting is June 26th) to learn about updates or reach out to a current member of NODE for specific and/or unique opportunities

Panel Discussion
Market Opportunity
- We've estimated that there could be roughly $100 Billion in incentives that roll out over the next five years for energy efficiency and building decarbonization. This makes it a great time to start building this data set and this open data source for everyone
NODE's current roadmap and milestones to achieve

- Final alignment on the final details of this schema document and then we will create a unified dataset representing all the known incentives

Current Data Coverage
- Estimating coverage will be about 5,000 incentives across the federal, state, utility, and local government levels. As of now, the information isn't all out there yet, but once it is, all of the data will be on the Node Collective website (nodecollective.org)
  - The initial focus is on residential and single-family buildings with a focus on decarbonization and electrification incentives and deeper coverage is not in scope for initial data release but will be something to target as more members join NODE Collective.

Sourcing Accurate Data
- The current members of NODE Collective rely on a mix of manual research, automated monitoring, AI-assisted workflows, and direct contributions from incentive program administrators and the general public.
- Over time, as NODE raises necessary funding, data maintenance responsibilities will transition to the collective and we are currently in discussion of the right ways for our members to play to their existing strengths

How NODE Complements the Work of Some of the Current Members
- **DeAndrea**: For Eli, NODE's initiative can enrich contractor tools with up-to-date, comprehensive incentive data, allowing contractors to offer more informed recommendations to their clients about potential savings and benefits, thus enhancing customer satisfaction and trust in Eli's services.
- **Lacey**: RMI could use the NODE Collective's repository to identify market trends and gaps in the electrification incentives landscape, which can guide strategic planning and development of market-based solutions to foster an inclusive clean energy transition in the residential sector.
  - Also, having all this information in one location can help us see where the incentives are and where to advance legislation or policy around these incentives to increase accessibility.
- **Tom**: NODE's repository could seamlessly integrate with Rewiring America's tools, enhancing the accuracy and reach of the API and calculator. This integration allows for real-time updates and more precise predictions on incentives, making the tools more effective for users across different regions.

Questions

1. **Is this data freely accessible? Will there be any restrictions for using data from NODE Collective?**
- Yes, the data will be freely accessible via our website and other means. To ensure responsible use, we will evaluate methods to track who accesses the data and prevent misuse.
- No, we have an open question as to how we will track usage so that we can be responsible publishers of this information, but we don't have any intention to control the applications or usages of the data once it's distributed. The hope is that this baseline dataset being available for everyone will save a lot of organizations' time and resources.

2. **What and who is NODE Collective intended for?**
- The NODE Collective aims to create an ecosystem of mutual benefit for consumers, contractors, OEMs, retailers, tech startups, government, community-based organizations, and any other

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stakeholder who could benefit from having access to incentive data. The idea was to take a fragmented landscape and make it more accessible. So it provides the data and information for all the different end users. For example, if you're a contractor it's helpful to see what's available and for policymakers, it might be helpful to identify gaps and if the incentives are aligned with our state energy goals.

● And the way NODE Collective is created, we are just providing standardized data that helps give everyone the same understanding of all the incentives but we expect people will build tools sourcing this data.

3. **What is an email address to simply reach someone at NODE, not to sign up for a list?**
● You can email node-collective-tsc@lists.lfenergy.org and it'll send an email to our steering committee members so one of them can get back to you. Other options include emailing info@nodecollective.org or one of our member organizations directly.

4. **Are multi-family building incentives included? Is solar included? Is community solar included? Is on-bill financing included? Are e-mobility charging stations sited outdoors included? Are dynamic tariffs included? Are incentives to keep people on heat pumps included?**
● Some of our members collect multi-family incentive information and we hope to include it over time. We welcome additional collaboration and data contributions in this area. The current focus for NODE is residential, consumer-facing incentives which might not cover the full breadth of multi-family and commercial incentives.
● Solar for residential buildings will be included in the database.
● At the moment we are not aware of specific residential incentives for community solar, although there are incentives for solar in our dataset.
● BDC and DSIRE currently track financing programs but other members don't yet because the structure of financing incentives can be very different from other measures. As we develop the schema and look at required and optional fields, we'll include financing if it fits in the initial models. We intend to include financing programs in the future and would welcome additional members who want to focus on this.
● Not initially. We are focused on residential, consumer-facing incentives first. We are not opposed to including this in our schema and data if there is interest, perhaps new members of the Collective would be able to drive new initiatives such as this.
● The NODE Collective is not planning to include rate design elements like dynamic tariffs in our scope of work. As more organizations join the collective, this could be something to consider in the future. For now, we are focusing on building up the coverage of electrification incentives.
● If there are programs in the U.S. that provide such incentives, then it would certainly be within the scope of NODE to include the data in the repository.

5. **Will federal funded programs and administrators, such as LIHEAP and WAP, be involved (and/or required) to update incentives available in the database? Have they been involved thus far?** It can be helpful to understand where programs overlap in services because each program can focus on similar outcomes (i.e. upgrade to heat pump water heater from current condition assessment) and

where they diverge/ have gaps offer opportunities to optimize the use of programs based on overall resident goals/needs.

- We hope that the administrators and implementers of any and all relevant programs will want to get involved in NODE, and we aim to build tools that would support their involvement. We don't have any mechanism to require them to get involved today, though we would support legislation and other measures that might compel programs to publish structured, open data, or APIs to describe their incentives. Some of our members are involved in direct policy/advocacy efforts to push for this. We're also seeing complementary "one-stop shop" legislation happening already in some states, and this will create officially maintained collections of incentives that we'll certainly look to build upon and partner with if we can.

6. **It would be great to include RECs that are becoming available in some jurisdictions for residential geothermal heating and cooling systems - "GRECs" tradeable assets.**
- We are focused on residential, consumer-facing incentives first. We are not opposed to including this in our schema and data if there is interest, perhaps new members of the Collective would be able to drive new initiatives such as this.

7. **Are you partnering with these data providers to stabilize/ govern/ version their data products?**
- We hope that the administrators and implementers of any and all relevant programs will want to get involved in NODE, and we aim to build tools that would support their involvement, including direct involvement to maintain the data as their programs evolve.

8. I know there is a lot of work to do in the U.S. over the next few years but **is there any consideration at all of looking at incentives abroad down the line**?
- Given the geographical footprint of our current member organizations, our current focus is in the U.S. While there is potential to extend our work internationally, we would need additional member support. There's significant complexity to address in the U.S. as a first step. That said, LF Energy has international projects, and expanding abroad has been a somewhat recurring request, so it could be possible down the line, though it's not something that the NODE Collective is actively pursuing.

9. **How can NODE Collective facilitate policy analysis?**
- Several governmental entities at various levels have shown interest in learning more about NODE Collective, as the data could help policy and advocacy groups identify where more resources are needed. It is possible to estimate the incentive contribution for a given household situation, comparing cities, states, and other regions to identify where more support is needed, or where the existing incentives are sufficient to justify a bigger marketing push or outreach to households. While we are in the early stages, we hope different levels of government will utilize and contribute to the data repository. We encourage all organizations to provide feedback and get involved to help shape the future of this data repository.

10. From a policy formation perspective, the dataset can be used to rationalize incentives and cover gaps that may still exist. **Are different levels of government engaged as potential beneficiaries?**

- Several governmental entities at various levels have shown interest in learning more about NODE Collective. While we are in the early stages, we hope different levels of government will utilize and contribute to the data repository. We encourage all organizations to provide feedback and get involved to help shape the future of this data repository. Also, we are planning to pick up our engagement and discovery process this summer, so please feel free to reach out or share!

11. **How granular does the data get? For example, local utilities like Reading Municipal Light may offer incentives for residents of Reading, MA only.**
- Yes, we'll cover service areas including cities. We will provide clear definitions of the areas so that users of the data can tie it to geographical definitions found from other sources (e.g. U.S. census). We expect data coverage including local utilities, municipalities, and other local programs to be built up over time and rely on the contributions of other organizations.
- One thing to note, municipal incentives are much more difficult to get ahold of, but BDC has done some work to collect all municipal incentives and rebates in California.

12. **Will the incentives be able to be filtered by zip code?**
- The official service area for most incentives does not exactly align with zip codes. We are evaluating if we can provide approximate coverage for zip codes, but it may be left to downstream consumers to implement the necessary logic to turn a zip code into a city, county, utility, or other service area.

13. **How do you deal with incentive programs that have limited budgets that "run out" periodically for the year?**
- Our long-term vision for this is to enable, encourage, and pressure the program administrators to publish the funding status directly on their own websites or to participate in NODE directly and take responsibility for that themselves. We're actively engaged with program administrators in early research conversations to ensure that the solution is feasible.
- We're also working with an unaffiliated but complementary effort aimed at producing recommended HTML markup for incentives at schema.org. The NODE Collective would commit to scraping that markup if program admins implement it. With that functionality in place, we could start to commit to SLAs for pulling back stale information. Currently, that is a best-effort process.

14. **I'd love to hear whether different types of data structures were considered.** I've looked at this a bit and to me, the obvious choice was a graph structure, not a relational one. Something like linked data (i.e. turtles or RDF) with a standard schema listed on schema.org would allow a ton of ability to integrate with existing technologies such as SPARQL query engines.
- We have settled on a relational structure that we think will be easier for more developers to understand and make use of, based on surveys of similar open data efforts like GTFS. However we intend to provide open-source tools to convert the data from one format to another, and we are not opposed to distributing the data in multiple formats over time. We intend to capture relationships between incentives (e.g. prerequisites, groups that share a funding cap, etc.) where a graph representation and supporting tools might shine.

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15. **Is there a way to programmatically match specific products (or classes of products) to specific incentives?** Is there a programmatic way to understand how to redeem an incentive (the bureaucratic steps)
● NODE's initial schema and dataset will not yet cover the required appliance specifications to establish eligibility for a specific system or machine. Likewise, we won't yet cover the redemption steps, instead focusing on linking to the best available application form or "get started" page on the program's own website. We see other like-minded organizations in the space tackling this area and we would welcome collaboration, but none of the current members is planning to put this level of detail into the open schema and dataset today.

16. **How will the issue of drill-downs be addressed?** For example, CCAs within an IOU have different programs that are sometimes additive, and sometimes not. And of course, individual cities have a map overlay over CCAs and IOUs.
● The combination of incentives from different programs, also known as stacking, layering, or braiding, is an important and difficult one! The initial NODE schema does not directly address that, but it is possible that it will in the future with the help of organizations who want to get involved. In the meantime, other organizations including Eli Technologies are focused on addressing that problem.

17. **Have you considered using https://hpxml.nrel.gov where applicable?** Home performance data dictionary. Specific equipment, features, measures
● Thanks for highlighting this. We have looked for prior art and existing open schema documentation, enum lists, etc. that are already in the market and used to describe similar appliances, measures, incentives, rebates, etc. We'll take a look at this one too!

18. **Are tables sufficient to express these rules?** We at PolicyEngine have combined parameter files with Python logic for each program in our open-source engine for tax and benefit programs (including IRA incentives) as we found the logic differs too much across programs to rely only on data.
● Some of our current members also maintain code to express the business logic of eligibility. We do think we can strike a balance between what's described as "data" and what gets evaluated for a particular user and their income, geography, etc. It may mean that a small number of complex incentives get left out initially. It likely means that we need to share documentation on the intended use of the amount structures we publish, to ensure that downstream consumers implement eligibility checks and estimates accurately.

19. **How is the product different from Rewiring America's electrification calculator?**
● For the first release of NODE's data, the underlying info from Rewiring America's API will be shared, merged, and de-duplicated along with information from other NODE founding members. The NODE coverage should be as good or better than Rewiring America's. Rewiring America's API will eventually consume data from NODE so coverage will be the same in both. The Rewiring America API will continue to include business logic to estimate eligibility by income and geography, as well as our own QA and validation through testing in our product suite, so we expect it will still add value vs. using the NODE data directly.

20. **Which 10 states are "well covered" by RA?**
● CO, DC, IL, MI, NV, PA, RI, VA, and VT are available now in Rewiring America's incentives calculator and will be live in the API by the end of June.

21. **Will there be a NODE Coach opportunity?** Contractors may be time pressured (labor shortage) and could use help with advising a homeowner.
● While NODE may provide playbooks or information on accessing the data, we don't intend to step into a coaching role. However, some of our members or other organizations do provide such services outside of their role in the NODE Collective.

22. **How does NODE plan for this database to be used at the kitchen table when the sale of these appliances is being made? Or is the application for general education/transparency?**
● NODE is focusing on providing comprehensive and standardized data that is open and accessible, thus empowering organizations to develop consumer-facing tools and applications that make incentive information easily accessible. For example, Rewiring America, DSIRE, and The Switch is On campaign plan to integrate NODE's data into their websites, databases, and/or APIs. From a contractor's perspective, Eli Technologies will use NODE's data to streamline rebates and incentives, simplifying the decision-making process.
● While NODE itself does not directly engage with consumers, it supports the creation of tools and technology that facilitate informed decisions at the kitchen table, promoting transparency and education on electrification incentives.

23. I believe you said the data would be free to use, but can you clarify: **that would be for both non-profit/NGO/gov use-cases as well as for-profit tools**?
● The data will be available for both nonprofit and commercial uses to advance electrification. While NODE provides foundational data, other products may add value through additional validation and logic. We aim to drive innovation rather than compete with existing products.

24. **After the incentives function becomes available and reliable, a great next project would be helping contractors apply for the incentives and capture the documentation requirements.** For example, often programs want to make/model/pictures of the pre-existing and new appliances in addition to a form signed by the residential consumer.
● Providing specific solutions for contractors is outside the scope of the NODE Collective, but many other organizations, including some of our founding members (notably Eli), do provide tools to streamline the incentive application process.

25. **Do you envision NODE interacting with the broader benefit access space?** For example, the Code for America Summit is happening today, and they and others are working to boost take-up of programs like food stamps and the child tax credit.
● Yes. NODE member organizations like Rewiring America and BDC are in touch with organizations that connect households with other government benefits. Some early adopters of Rewiring America's

embeddable calculator are integrating it with their apps that reach low-income and disadvantaged communities. These integrations will benefit from NODE's data and work, and NODE's data may be consumed directly as well.

26. Will you expose both the raw as well as the transformed/standardized data? Do you intend to enrich the datasets with derived metrics and/or metadata?
● The initial plan is to publish the dataset in the NODE schema only. If there is enough interest and value in publishing the raw data, it is something we are open to considering in the future. Likewise for the derived metrics and metadata. We encourage all who are interested in new initiatives to get involved with NODE to help shape the future of the data repository.

27. Do you have any timeline estimate for when schema and data will be made available? Weeks? Months? Next Year?
● NODE's member organizations are collaborating on a best-efforts basis to release the initial version of the schema within a few weeks. A de-duplicated and unified dataset could take a little longer, likely in the "months" time frame.

28. Given that there is no API, how are you thinking of evolving the schema you've defined over time?
● The schema will certainly evolve over time as coverage increases. The dataset will also evolve along with the schema. NODE does not yet have a well-defined versioning strategy, which we hope will come from more organizations providing feedback and getting involved to shape the future of this data repository.

29. Some incentives are for homeowners' primary residence others for rental property, and others for renters. **Will that become more understandable for a specific project?**
● All incentives will include eligibility requirements as specified by the programs, so any incentives focused on primary residences or rental properties will be represented in NODE as such. The initial version of the schema doesn't have specific data structures to handle that characteristic, but it might be a future addition. We encourage all to get involved and provide feedback to help shape the future of this data repository.

30. Is there a project roadmap available?
● We have not yet gotten around to publishing a roadmap. As discussed in the webinar, at a high level the roadmap is: a) Publish the initial version of the schema; b) Each member organization (and others, if they wish) to make their own data available in the NODE schema; c) De-duplication and merging of the data in a combined dataset; d) Continue to evolve the schema, recruit new members, and increase coverage.