Using AI to Benefit Co-op Operations

Key Highlights

- The rapid development of artificial intelligence (AI) continues to transform the way we use information across all types of businesses, including the power industry. Individual utility projects and industry-wide efforts are underway to harness AI for the specific needs of power providers and their consumers.
- In collaboration with members, NRECA is actively exploring use cases for AI and engaging in industry forums on the topic.
- NRECA now offers AI resources and information for use by member co-ops at www.cooperative.com/AI, organized around five core concepts or "pillars."
- We want to hear more from you! If your co-op is using or planning for AI, NRECA would like to know about your experience and explore ways to partner. Please reach out to our team at: coopAI@nreca.coop.

Introduction

Artificial intelligence (AI) continues to expand into all areas of life and work, and electric co-ops are no exception. The rapid growth of AI services is driving demand for electric power and placing increasing demands on all utility providers, including co-ops. At the same time, AI creates new tools and opportunities that can help co-ops and the broader electric sector gain insights and automate processes to operate more efficiently. Emerging use cases for AI in the industry include consumer interactions, internal operations automation, field inspection, outage response, geospatial analytics, and peak demand forecasting.

In the Technology Trends survey of participants at NRECA's 2024 PowerXchange and TechAdvantage conferences, 54% of respondents indicated an interest in AI. Some co-ops have already begun to use AI in various ways, from common member-facing and business applications to more specialized and utility-centric functions. Notable examples include:

- **Dairyland Power Cooperative** has developed multiple AI applications for itself and its member distribution co-ops. Their VoltWrite application is a generative AI platform like ChatGPT that enables co-ops to use AI for a variety of tasks. VoltWrite was developed and is maintained in-house at Dairyland, lowering cybersecurity risks when compared to publicly available AI tools.[1]

[1] https://www.cooperative.com/remagazine/articles/pages/gt-focus-dairyland-voltwrite-uses-customized-ai-for-cybersecurity.aspx

- **North Carolina Electric Membership Corporation (NCEMC)** uses AI tools to improve the accuracy of its peak load prediction. The goal was to narrow and refine the peak prediction window to reduce the churn on load control programs and to enable optimal utilization of energy storage for reducing the peak load. NCEMC developed an AI machine learning model that utilizes historic observed weather, load, and load forecast data to generate a distributed energy resource (DER) dispatch probability.[2]

- **Vermont Electric Cooperative** uses an AI tool to analyze outages and predict grid vulnerabilities in its service area. This analysis helps the co-op prioritize spending on upgrades, vegetation management, and other types of resiliency strategies.[3]

NRECA is also participating in utility industry consortium efforts to advance AI development across the electric sector:

- The **GridFM project** (gridfm.org) seeks to develop AI "foundation models" for power grids. These are large AI models that are trained on grid data, rather than text or other types of data. Once the models are trained, individual stakeholders can adapt these models for custom applications, using their own proprietary data in a secure and economical way.

- The **Open Power AI Consortium** (msites.epri.com/opai) was created by the Electric Power Research Institute (EPRI) to develop and maintain AI models and applications that are specific to the power sector. By fostering collaboration across the industry, the consortium seeks to accelerate the creation and deployment of AI technologies that benefit all of its members.

To help members navigate the rapidly changing world of AI, NRECA has developed a webpage about AI at www.cooperative.com/AI. This page includes a growing list of resources to help co-ops advance their knowledge and use of AI, including:

- Articles and other publications about AI and its impact on co-op operations.
- Links to training opportunities for co-op leadership.
- Video discussions about AI and co-op use cases.
- Detailed case studies of how co-ops have implemented AI projects.
- An AI policy template that individual co-ops can adapt to meet their needs.
- Information about AI research that NRECA is conducting for co-ops.
- NRECA contacts for questions and inquiries about AI topics.

[2] https://www.cobank.com/knowledge-exchange/power-plays/power-plays-s4e05
[3] https://www.vermontpublic.org/local-news/2025-03-19/can-ai-predict-where-climate-change-disrupt-power-grid-vermont-utility-thinks-so

Five Pillars of an AI Strategy

As your co-op explores how to use AI in a variety of potential applications, it is important to develop a comprehensive strategy for ensuring that the efforts expended create tools and results sustainable both in usage and in impact across the co-op. To assist in this process, NRECA has developed an AI strategy framework around five principles or "pillars." The pillars below describe key areas for consideration before implementing and using AI at your organization, along with actionable steps and resources that are available to help.

Pillar 1: Planning

A strategy for implementing AI is essential to ensure your organization reaps the greatest benefits while mitigating risks. As a first step, it is critical to have the initiative, support and buy-in from the co-op CEO and others on the senior leadership team to explore and deploy AI at the co-op. While the leadership team has an essential role in developing and driving this strategy, be sure to involve staff with AI expertise from every part of the organization. You might find that you already have an AI expert on your team!

Some key actions for this pillar include:

- Appoint an AI champion at your co-op – preferably from the co-op's senior leadership team.
- Educate co-op leadership and directors about AI. NRECA offers a course for directors, as well as other leadership training.

  To bring this course onsite at your cooperative for a fee, please contact Danielle Jackson at Danielle.Jackson@nreca.coop or Jessica Sutton at Jessica.Sutton@nreca.coop; for additional opportunities for co-op leadership, please contact Patrick Mangan at Patrick.Mangan@nreca.coop.
- Survey employees to see how they are using AI, both at work and at home.
- Inventory any AI tools that are available to your co-op, or that may already be in use.
- Explore how (if) AI-based tools and processes can support fulfillment of the strategic objectives of your co-op.
- Determine the use cases, and the specific questions in each use case to be addressed, along with the metrics and associated targets that will measure improvement from using AI-based tools.
- Create a roadmap to get from your current state to a future version using more AI tools, when they make sense for the organization. This process may involve identifying gaps and/or prioritizing pilot projects that feature AI.
- Develop a robust process to evaluate costs, benefits, and internal capabilities for "build vs. buy" decisions. That is, for each project, should the co-op create its own AI tool in-house or use a commercially available tool? Keep in mind that building AI tools requires significant staff resources, capital investment, and ongoing maintenance. It is likely that most initial forays into exploring AI use cases will use commercially available tools.

- Finally, estimate the investment required – both in staff time and budget – for executing on your AI roadmap, and perform a benefit-cost analysis to ensure that the investment is justified.

Pillar 2: Policy

An AI policy defines who can use AI and for what purposes, what types of tools are acceptable, how data should be protected, and other important criteria. This policy should be established before utilizing AI, and all co-op staff should understand and acknowledge it.

Some key actions for this pillar include:

- Download and review NRECA's Sample AI Policy, and work with your legal team to customize it for your co-op.
- Make sure that all staff receive and understand the policy.
- Use the policy rollout as a springboard for discussions and training about using AI.

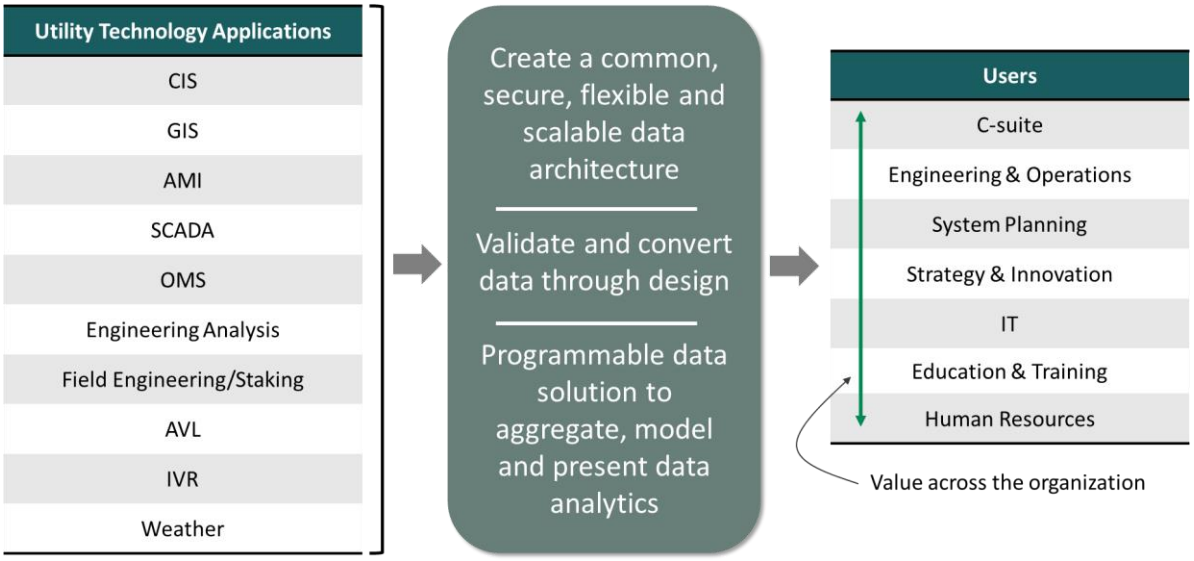
Pillar 3: Data Strategy

An AI analysis can only be effective if the input data is verified and validated to be accurate, comprehensive, and up-to-date, avoiding the "garbage in, garbage out" pitfall. AI tools can also generate additional streams of data that must be stored and managed securely. And all AI tools can be subject to "hallucinations," incorrect or fabricated conclusions that are not supported by the provided data. For these reasons, a prerequisite *before AI tools are used*, is to have a data strategy and an enterprise-wide database with verified and validated data ("single source of truth") in place and implemented. You can find out more about the key elements and benefits of having a data strategy and the support offered by NRECA at this portal on cooperative.com.

Some key actions for this pillar include:

- Develop a data strategy that starts with cataloging all available data (including metadata) at the co-op, including data sources, accuracy and other characteristics.
- Create a single, comprehensive database that contains verified and validated data. One possible structure for the database is shown in Figure 1.
- Adopt and communicate specific processes on ownership, privacy, access, governance, authentication and updates for the enterprise-wide database.

Figure 1: Data Structure



Pillar 4: Security

It is critical that cybersecurity measures are in place at your co-op as a standard practice and before AI tools are deployed, to protect your co-op and the grid at large. AI tools provide additional "attack surfaces" for malicious entities to try to gain access to your co-op systems and data for disruption. Effective security requires integrating information technology (IT), operational technology (OT), and physical security controls including strong access management, network segmentation, monitoring and coordinated incident response to protect critical infrastructure.

NRECA has a wide variety of resources and engagement opportunities for co-ops to learn about and implement fundamental cybersecurity measures. A great starting point is the Co-op Cyber Goals Program developed by NRECA and used by almost 500 co-ops. In addition, an episode of NRECA's Along Those Lines podcast, Balancing AI's Benefits with Cybersecurity Risks, features our director of cybersecurity, Carter Manucy, discussing cybersecurity considerations for AI.

Some key actions for this pillar include:

- Review your current cybersecurity policies, looking for sections that could potentially impact implementation of AI tools and associated data usage.
- Consider ways to apply AI tools to strengthen cybersecurity protections and response.
- Do not overlook physical security as a component of cybersecurity. Physical assets such as control doors, cameras, alarms and building or operational controls play an important role in protecting digital assets. Because physical and digital systems are often networked and remotely managed, a cyber compromise can directly enable physical intrusions, safety risks or operational disruption, and vice versa.
- Visit www.cooperative.com/cybersecurity for NRECA cybersecurity resources that can help you improve your co-op's cybersecurity.

Pillar 5: Workforce Development

There is a lot of interest, in the industry and among the workforce, in exploring AI applications for a variety of use cases. As AI tools are available – some for free – in an easily accessible manner, it becomes important to ensure that co-op workforces are: 1) clearly aware of data access, usage guardrails and specific policies that must be followed while using AI tools; 2) an integral part of the implementation of the AI strategy with clear and frequent communications on the topic; and 3) empowered to explore AI applications that are relevant to their work and provide measurable improvements in efficiency and accuracy. At the same time, it is also important to provide structured training and education to help ensure that AI tools are used effectively, strategically and securely to contribute towards achievement of co-op objectives. NRECA data shows that almost 20% of co-op employees will be eligible to retire by 2028.[4] AI may provide an opportunity to capture and transfer institutional knowledge to new workers while assisting seasoned employees with their tasks.

Some key actions for this pillar include:

- Foster a "pro-AI" culture and empower staff to investigate AI applications. Create an "AI community" with champions from each co-op department to ensure the benefits and lessons learned from AI applications are disseminated promptly and widely, with a regular cadence.
- Provide industry exposure to staff through conferences, workshops, ongoing training and education to stay current with AI tools, opportunities and challenges.
- Join NRECA's online AI professional community to discuss AI and share projects and ideas with peers. Contact our team at coopAI@nreca.coop to join.
- Consider attending AI sessions at NRECA's PowerXchange and TechAdvantage, and other conference and webinar sessions.

Summary

Suddenly it seems like AI is everywhere, rapidly expanding into every corner of life. While the opportunities created by AI are exciting, the challenges and possibilities can also feel overwhelming. The framework presented here, and the resources available on NRECA's AI webpage (www.cooperative.com/AI), were developed to help co-ops build expertise with AI by putting this technology to work in beneficial ways.

We want to hear from you!

If your co-op is using or planning for AI, NRECA would like to know about your experience. Please reach out to our team at: coopAI@nreca.coop.

[4] https://www.cooperative.com/remagazine/articles/Pages/Workforce-Challenges-Co-ops-Face-Unfamiliar-Recruiting,-Retention-Pressures.aspx

Resources

- NRECA now offers AI resources and information for use by member co-ops at www.cooperative.com/AI, organized around five core concepts or "pillars."
- See NRECA's related resources on Data Strategy and Data Analytics:
    - Data Strategy Website: https://www.cooperative.com/programs-services/consulting-services/technology-management/Pages/data-strategy-planning.aspx
    - Data Analytics and Data Strategy Resources:
        - https://www.cooperative.com/topics/data-analytics/pages/data-analytics-report-lending-insight-to-intuition.aspx
        - https://www.cooperative.com/conferences-education/courses/the-data-driven-electric-co-op/Pages/default.aspx

Contacts

For questions and inquiries about AI, please contact our team at: coopAI@nreca.coop.

For questions about cybersecurity specifically, please contact our cybersecurity team: membersecurity@nreca.coop.

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