KYMEA Energy Center I Q&A

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07-01-2024

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Q&A
KYMEA Energy Center I

Project Specifics

1. **Can you provide a detailed overview of the power plant project?**
   Answer: The Kentucky Municipal Energy Agency (KYMEA) intends to construct the KYMEA Energy Center I, a natural gas electric generating facility in Madisonville, Kentucky with a capacity of approximately 75 net megawatts (MW). The Plant Site will be located at 1757 AC Slaton Road in Madisonville, Kentucky with the LGE/KU Interconnection Facilities (Substation) located adjacent to the Plant at the corner of A C Slaton Road and Bean Cemetery Road. A high-pressure natural gas line will be constructed to serve the Plant, running from the Texas Gas high-pressure network near Osborne Lane to the Plant Site.

   The Project will install a new electric generating unit comprised of four Wärtsilä 18V50SG reciprocating internal combustion engine (RICE) generators. Each RICE generator would have a nominal capacity of 18.8 MW. The Project will be designed for both continuous and peaking service with the capability of multiple quick starts and stops per day. Site development is expected to begin in June 2025 with a proposed in-service date for the Project of August 2027. The Project is expected to have an operating life of not less than 30 years.

2. **What is the expected power generation capacity of the plant?**
   Answer: The expected power generation capacity of the KYMEA Energy Center I, in Madisonville, Kentucky, is approximately 75 net megawatts (MW). The plant will be equipped with four Wärtsilä 18V50SG reciprocating internal combustion engine (RICE) generators, each having a nominal capacity of 18.8 MW. The project is designed for both continuous and peaking service, capable of multiple quick starts and stops per day.

3. **How does this plant compare to other existing facilities in terms of capacity and technology?**
   Answer: The project utilizes long proven advanced technology. Wärtsilä RICE engines offer superior single-cycle efficiency and power density combined with fast loading and un-loading capability, capable of providing both baseload availability or supporting an optimized transition to renewable energy. This technology was pioneered by Wärtsilä in shipping vessels with over 40,000 installations. Wärtsilä also has over 79,000 MWs of installed engines in power plants.

   Who will build the plant? The Christman Company, partnering with Stanley Consultants, was selected as the EPC (Engineer, Procure, Construct) firm for the project. Both national firms are experienced with power projects and have specific

experience with this technology. Wärtsilä was selected to provide the engines, generator, and exhaust gas systems.

Economic Impact

4. **What is the anticipated economic impact of the power plant on the local economy?**
   Answer: This project will provide an important, reliable, cost-effective backbone to enable Madisonville's/KYMEA's load growth. Construction of the plant will bring approximately 100 local jobs, and around 15 permanent jobs will exist after completion. The Christman Company plans to use local subcontractors and suppliers, resulting in a boost to the local economy.

5. **How many jobs will the project create during the construction phase and once operational?**
   Answer: The construction phase of the power plant is expected to create a significant number of jobs, offering opportunities in various civil, mechanical and electrical construction related fields. We are committed to hiring locally to the greatest extent possible, which will provide a boost to the local economy. Once operational, the power plant will continue to provide employment for a skilled workforce responsible for its day-to-day operations, maintenance, and administration. We are currently finalizing the exact numbers but expect to hire at least 15 full-time positions. Our goal is to not only generate clean energy but also to contribute positively to the job market and economic development of the region.

6. **Are there any plans for local business involvement in the construction and operation phases?**
   Answer: The KYMEA Energy Center I project is deeply committed to fostering local business involvement throughout both the construction and operational phases. During construction, we are creating approximately 100 construction jobs and have planned for the bidding of local subcontractors under Christman as the EPC Manager. This approach not only supports the local job market but also ensures that the economic benefits of the project are felt within the community. Once operational, the energy center will sustain 15 full-time jobs and continue to engage local businesses for ongoing needs, contributing to a robust local economy. The project represents a $130M local investment, reflecting our dedication to the economic vitality of the region. We are proud to be a catalyst for growth and opportunity in our community.

Environmental and Regulatory Compliance

7. **What environmental impact studies have been conducted for this project?**
   Answer: The KYMEA Energy Center I project is in the process of completing several environmental impact studies required by the Kentucky State Board on Electric Generation and Transmission Siting. It is important to note that environmental impact studies are a critical aspect of project planning and are typically conducted to assess the potential effects of a project on the environment. These studies help ensure that the project complies with environmental regulations and standards, and they also inform mitigation strategies to minimize any negative impacts. Once the environmental impact studies for the KYMEA Energy Center I project are finalized, they will provide valuable insights into the project's environmental considerations and compliance measures.

8. **How will the power plant comply with state and federal environmental regulations?**
   Answer: In addition to the environmental impact studies required by the Kentucky State Board on Electric Generation and Transmission Siting, compliance with state and federal environmental regulations is a priority. KYMEA is currently developing an environmental permitting matrix to identify all required permits as the permitting process begins. KYMEA is committing to adhering to all relevant environmental regulations through careful planning, implementation of best practices, and ongoing monitoring to ensure that they meet or exceed the required standards.

9. **What specific measures are being implemented to minimize environmental impact?**
   Answer: Built on the framework of the highly efficient engine with integral turbocharger and combustion control system, the project will utilize state of the art SCR technology to provide low greenhouse gas emissions in compliance with state/federal regulations. The plant also utilizes closed cooling water systems which greatly limits the water consumption and discharge of the plant. All chemicals are stored in concrete chemical containments with oil-water separator systems to greatly reduce any spill potential.

   What is an SCR? SCR stands for Selective Catalytic Reduction. The SCR reduces nitrogen oxides (NOx) to nitrogen (N2) and water vapor (H2O). Urea is injected into the flue gas before passing through a catalyst to complete the reaction. To reduce carbon monoxide (CO), an oxidation catalyst is also housed in the SCR.

Community and Public Relations:

10. **How is the project engaging with the local community?**
    Answer: The Public meeting on July 1, 2024, will be instrumental in engaging and informing the community about the project. The project's commitment to local job creation, economic impact, and environmental benefits suggests a proactive approach to working with the community to ensure the project's success and alignment with local interests.

11. **What feedback have you received from residents and local stakeholders so far?**
    Answer: The project is engaging with the local community through various initiatives. One key event is the public meeting on July 1, 2024, which will serve as a platform to inform and involve the community about the project. The project emphasizes local job creation and economic impact, as well as environmental benefits, indicating a proactive approach to aligning the project with local interests and ensuring its success.

    Additionally, the project has received positive feedback from residents and local stakeholders, with the community expressing excitement about having affordable rates and energy reliability through the addition of the KYMEA Energy Center I and its partnership with KYMEA.

12. **How will the project address any public concerns that have been raised?**
    Answer: As part of the public meeting process, we will be gathering any concerns from the community. This feedback will be considered as we begin the design process for the plant. KYMEA is committed to being a good neighbor and partner to the City of Madisonville.

Safety and Health:

13. **What specific safety protocols are in place for the construction and operation of the power plant?**
    Answer: The construction industry is well known for its inherent dangers, including heights, scaffolding, electrical grounding, site excavation, large equipment and materials, and a variety of trades working in common spaces. Christman is passionately committed to safety as a top priority, and we are fortunate to have that same commitment from our employees and trade workers. It is our goal that each worker returns home safely each day. Christman's comprehensive safety program includes:

- "Zero Injuries" Safety Program Goal
- Project-Specific Safety Programs and Orientation Videos
- Requirement of Acceptable Safety Records for all Trade Contractors
- Comprehensive Safety Orientation and Training Programs
- Daily and Weekly Safety Meetings and Discussions
- Random Safety Inspections
- Full-Time Corporate Safety Team
- Progressive Disciplinary Action Plan
- Safety Certified Field Staff
- Safety Education and Leadership Training Opportunities

14. Has the project undergone a health impact assessment, and what were the findings?
Answer: No assessment is planned beyond the environmental.

15. How will the project ensure the safety and health of the local community?
Answer: In addition to securing and adhering to all environmental permitting requirements for plant operations, during construction, a Stormwater Pollution Prevention Plan (SWPPP) will be maintained. Fugitive dust emissions will also be controlled to minimize impacts to neighboring properties. The project will be fully fenced and gated site with appropriate site lighting and security measures. The project will also maintain a site safety orientation for all employees who are working on the site and for any visitors that may be on the site.

Project Timeline and Logistics:

16. What is the project timeline from initial construction to full operation?
Answer: The project timeline is 26 months from groundbreaking to commercial operation.

17. Are there any major milestones or phases that the public should be aware of?
Answer: The project plans to release engineering and procurement of engines in August of 2024. Construction in the field is planned to start in June 2025, with delivery of engines in spring 2026. Mechanical completion is planned for spring 2027, and commercial operation will start in the summer of 2027.

18. How will the project manage any potential delays or setbacks?
Answer: The project will work to minimize and recover any potential delays or setbacks through detailed scheduling & planned effort in a collaborative, team-based approach involving the construction manager, subcontractors, suppliers, owners, and other stakeholders. KYMEA also has many power supply contracts to ensure the

reliable supply of electricity to its members in case this project is delayed.

Future Outlook:

19. How does this project fit into the broader energy strategy of the region or state?

Answer: The KYMEA Energy Center I provides several benefits to the Commonwealth of Kentucky and Western Kentucky specifically. The technology employed allows the units to "follow" the load by filling the gap of Kentucky's renewable energy portfolio. When renewable energy is available, the plant generation can be reduced. Conversely, in times of low renewable energy output (darkness or winter) or at times when load outpaces solar farm output (i.e. early morning or evening), the units can be counted on to provide electricity. The fast start-up feature allows energy to flow quickly from the project in the event of an unanticipated decrease in renewable energy output (i.e., sudden rain or clouds).

In addition, the KYMEA Energy Center I generates electricity in Kentucky's transmission footprint. This is extremely important for the Commonwealth's energy independence. As more and more carbon-based generation facilities are retired across the nation, we believe it will be much more difficult to import power from neighboring sources. It is important for Kentucky to have generation that does not have to be imported. The plant's low greenhouse gas emission profile utilizes natural gas to provide reliable energy to the Commonwealth while simultaneously limiting its environmental impact.

20. Are there plans for future expansions or additional projects?

Answer: The project is designed for a possible future addition of four Wärtsilä 18V50SG engines. The plant siting and orientation has been selected to facilitate this option.

21. What long-term benefits does the project aim to deliver to the community and region?

Answer: The KYMEA Energy Center I will provide more than 30 years of environmentally intelligent, dependable, and low-cost energy to Kentucky while supporting the Commonwealth's renewable energy goals.

Who Are We

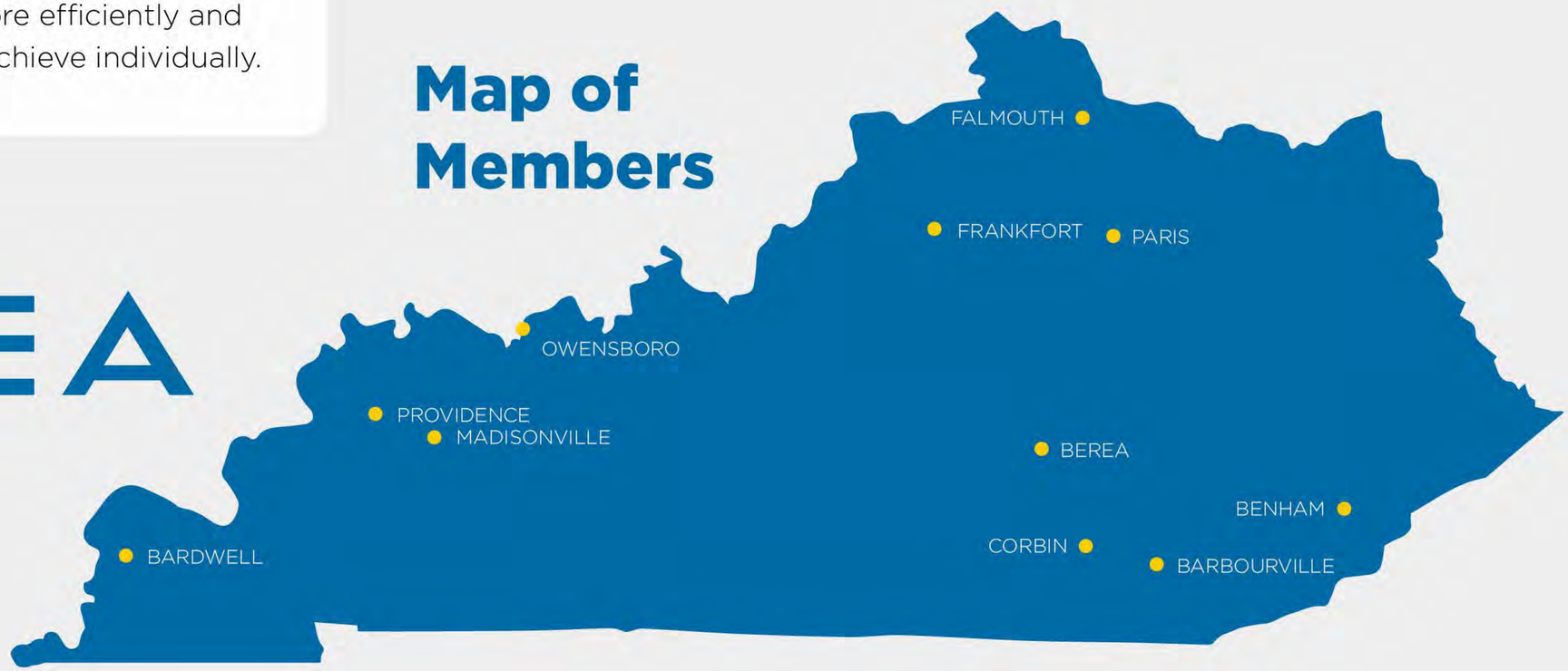
KYMEA exists to serve its members. Members may choose to enter into contracts with KYMEA for power supply or other services. Members also have the flexibility to establish projects for the benefit of one or more members, such as the All Requirements Project (AR Project), which has been created to acquire power supply resources to serve the needs of ten participating all requirements members. The business model objective of KYMEA is to provide cost-effective resources and services for the benefit of its members to enable them to achieve objectives they have set for themselves more efficiently and at lower costs than they could achieve individually.

What We Do

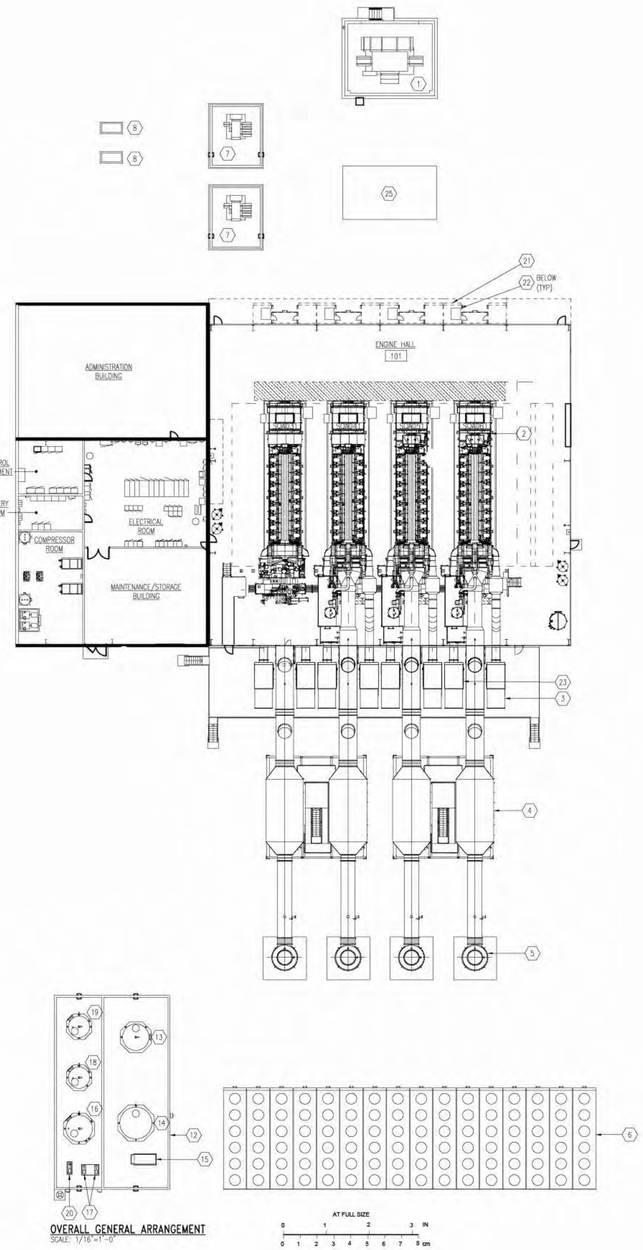
In September of 2015, after 18 months of study and discussion, eleven municipal electric utilities entered into an Interlocal Cooperation Agreement creating the Kentucky Municipal Energy Agency (KYMEA), a joint public agency. KYMEA was formed to facilitate effective collaboration among its members to do all things necessary or convenient to serve the current and future electric power and energy requirements of the members and to provide assistance to the members related to their electric power and energy utility systems.

KYMEA

Map of Members



KYMEA Energy Center I



LEGEND OF EQUIPMENT & STRUCTURES

1 GSU TRANSFORMER
2 ENGINE GENERATOR (TYP)
3 CHARGE AIR FILTER VENTILATION UNIT (TYP)
4 SCR AND CO CATALYST (TYP)
5 EXHAUST GAS SILENCER (TYP)
6 RADIATORS (TYP)
7 UNIT AUXILIARY TRANSFORMER (TYP)
8 HVAC UNIT
9 ENGINE HALL DRAINS SUMP
10
11
12 TANK FARM
13 WASTE WATER COLLECTION TANK
14 UREA STORAGE TANK
15 UREA FORWARDING PUMPS
16 CLEAN LUBE OIL TANK
17 LUBE OIL FORWARDING PUMPS
18 SERVICE LUBE OIL TANK
19 USED LUBE OIL TANK
20 LUBE OIL UNLOADING PUMP
21 VENTILATION UNIT (TYP)
22 NEUTRAL GROUNDING RESISTOR (TYP)
23 VENTILATION UNIT (TYP)
24 MAINTENANCE WATER TANK (TYP FOR 2)
25 MEDIUM VOLTAGE BUILDING

Site Layout

- Zoned General Industrial
- Former coal mined area
- Located next to the Madisonville Wastewater Treatment Plant
- 25,000 SF Plant, Admin, & Maintenance Space
- 9-acre Site Development
- New 69 KV Transmission Substation

FOUR WÄRTSILÄ 50SG ENGINES

The Wärtsilä 50SG is a four-stroke, spark-ignited natural gas engine generating set. High efficiency in a small footprint combined with great reliability and flexibility makes this solution ideal for flexible baseload and balancing applications. It offers unique fast-starting capability, which enables rapid response to fluctuations inherent to renewable generation. Wärtsilä 50SG also supports you towards decarbonisation with its low greenhouse gas emissions and capability of hydrogen blending.

- Low greenhouse gas emissions
- Fast-starting capability which enables rapid response to fluctuations typical to renewable generation
- Minimal water consumption
- Runs on natural gas, biogas, synthetic methanol and is capable of hydrogen blending

2
Minutes to full load

99.1%
Availability

18.86
MW per engine

Benefits

Local job creation and economic impact

- 100 construction jobs created
- 15 full-time jobs created
- Planned bidding of local subcontractors under Christman as the EPC Manager.
- $130M local investment

Improved energy reliability and efficiency

- 75 MW of reliable power production
- Low cost, natural gas powered
- Power produced in Kentucky for Kentucky communities

Enviromental Benefits

- Low emissions & minimal water consumption
- Fast and flexible dispatchability to support the Ashwood Solar I and Barkley Dam hydropower projects.
- Reduces KYMEA's carbon footprint

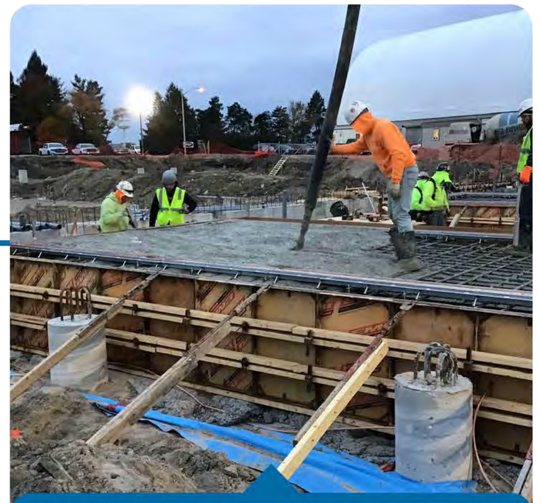
KYMEA

Construction Process

Engineering + Permitting
12 months

Earthwork
4 months

Deep Foundations
2 months



Foundations
3 months

Building Erection
3 months

Equipment Setting
2 months

Mechanical + Electrical
8 months

Start-Up + Commissioning
6 months

Stanley Consultants

CHRISTMAN
BUILDING SINCE 1894

WÄRTSILÄ

KYMEA ENERGY CENTER I

PROJECT DESCRIPTION

- Seventy-five (75) megawatt natural gas power plant.
- Plant consists of four (4) Wärtsilä 18V50SG reciprocating internal combustion engines (RICE).
- The 18V50SG engines are the world's largest four-stroke gas engines (18 MW), with 18 cylinders and a diameter of 50 cm. Each engine weighs 396 tons and is 18.6 meters long.
- 1757 AC Slaton Road in Madisonville, Kentucky
- Fast-starting capability enables rapid response to fluctuations inherent to Ashwood Solar I intermittent generation.
- Minimal water consumption with low greenhouse gas emissions.
- 100 construction jobs and 15 full-time jobs.

PURPOSE AND BENEFITS

- In 2027, KYMEA has a need for additional power supply, for the sole purpose of serving the All-Requirements (AR) members.
- Through KYMEA's integrated resource planning (IRP) process, the RICE technology was identified as the preferred option to add to the portfolio due to:
  - Efficient engines burning clean, low-cost natural gas.
  - Low carbon emissions.
  - Modular, scalable design.
  - Operational flexibility for balancing KYMEA's load.
  - Backup for renewable generation.
  - Ease of maintenance with long service intervals.
- KYMEA has awarded contracts to procure, construct, operate, and maintain the KYMEA Energy Center I power plant, leveraging KYMEA's tax-exempt financing capability.

Contact Michelle Hixon at mhixon@kymea.org for additional information.


What We Do
Map of Members
KYMEA Energy Center I
FOUR WÄRTSILÄ 50SG ENGINES
2
99.1%
18.86
WÄRTSILÄ
Benefits
KYMEA
KENTUCKY MUNICIPAL ENERGY AGENCY
EXIT


FOUR WÄRTSILÄ 50SG
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Minutes to full load
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Availability
18.86
MW per engine
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KYMEA
JOE A. EVANS III
CITY ATTORNEY
MUNICIPAL ENERGY AGENCY


EXIT
What We Do
Construction Process