JANUARY 30, 2024

SIKESTON POWER OPEN HOUSE

ALTERNATIVES UPDATE

BACKGROUND

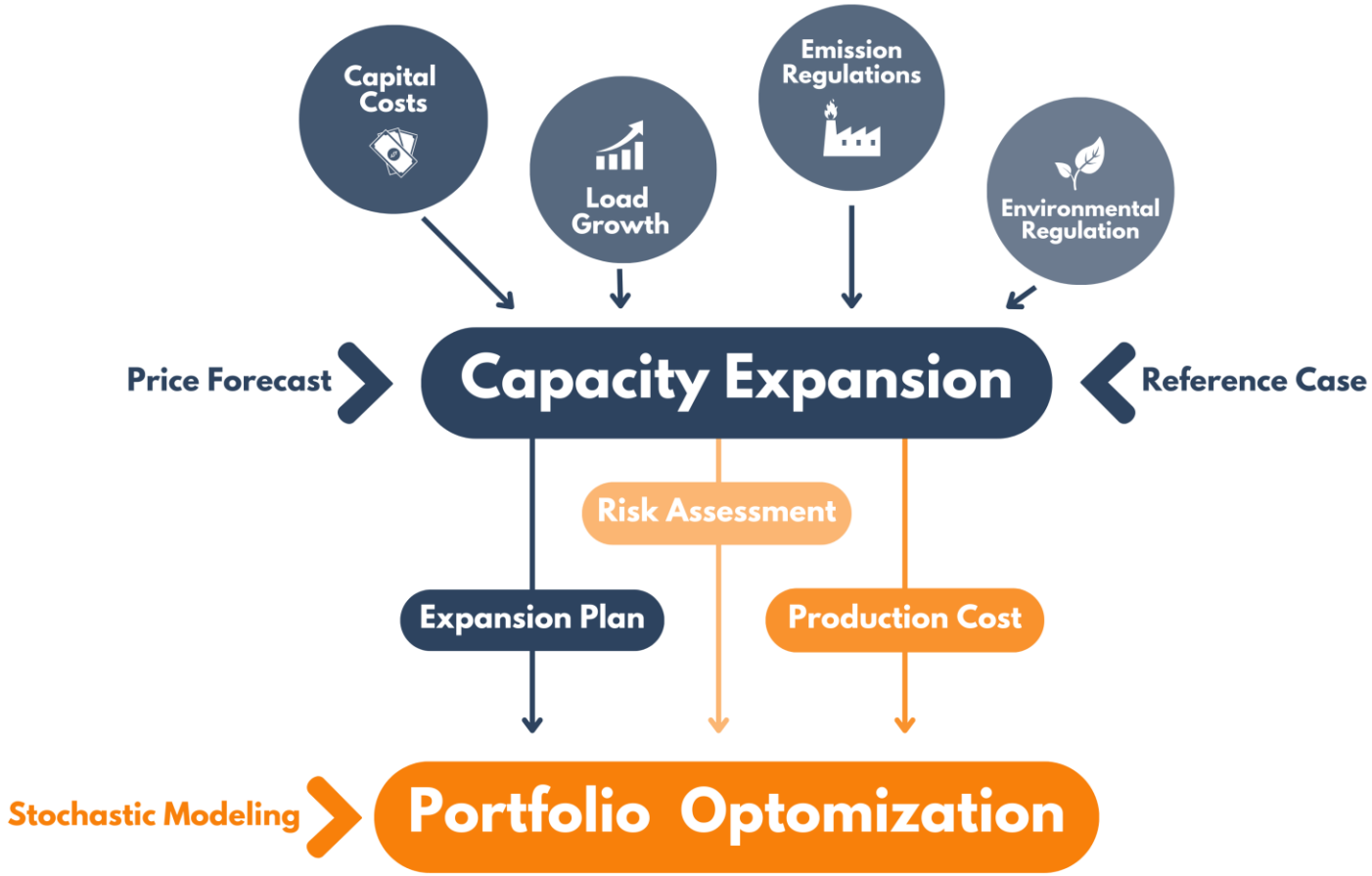
- Over the last 2 years the Sikeston Board of Municipal Utilities (“SBMU”) has engaged experts to determine the best alternatives to transition our Sikeston Power Station (“SPS”) to other technologies that are more cost effective and less carbon intensive.
- At our first open house held in June 2023 the public was able to learn more about the challenges and opportunities we face and the process we are undertaking to meet the community’s energy needs going forward. Slides can be found here.

- Due to increased market competition, pressures from natural gas and renewables, as well as escalating costs for coal plant operations, SBMU initiated a Power Supply Plan (“PSP”) to aid the utility with long term planning to continue to meet the community’s needs for reliable and affordable electricity.
- This Open House expands on the results of the PSP, the preferred power alternatives, and the next steps in our plan.

WHAT IS A POWER SUPPLY PLAN?

The Power Supply Plan (PSP) is a planning tool that SBMU used to analyze the various regulatory, economic, and technical aspects of producing and delivering electricity to their customers into the future.

The Power Supply Plan developed for Sikeston was a collaborative process involving SBMU, Leidos and DECARB.



INITIAL PSP ASSUMPTIONS

The results of the PSP are influenced by market conditions that affect the technologies recommended and cost of delivered power.

Environmental Regulations:
- Cross-State Air Pollution Rule
- Mercury and Air Toxics Standard
- Effluent Limitations Guidelines
- Disposal of CC Residuals from Electric Utilities
- Potential future carbon regulations

Fuel and Electricity Costs:
- Fuel and power forecasts
- Allows for a range price projections that captures volatility concerns

Southwest Power Pool (“SPP”):
- SBMU membership adds rules and regulations on generation
- Affects plant dispatch policy and resource adequacy

Fuel Availability and Plant Economics:
- The cost of operating SPS continues to rise
- Plant reliability will decline without considerable investment
- Cost of delivered coal is uncertain under current market

Historic Government Incentives:
- Infrastructure Investment and Jobs Act (“IIJA”)
- Inflation Reduction Act (“IRA”)
- Considerable tax subsidies for renewable technologies only
- Complements SBMU investment strategy

Renewable Energy Policies:
- Known and anticipated financial and regulatory environments
- Focused on acceleration of renewable electricity generation

POWER SUPPLY PLAN

ALTERNATIVES EVALUATED

Continued SPS Operations:

- Operate the 235-megawatt (MW) plant as-is until it becomes cost prohibitive.
- Consider converting SPS boilers to natural gas instead of coal, but it is expected to be a cost prohibitive short-term solution.

New Natural Gas Fired Power Plants:

- Replace SPS with efficient gas plant alternatives.
- Consider a range of smaller gas fired plants owned by Sikeston.
- Consider flexible peaking units that would work in concert with intermittent renewables (solar).
- Consider larger, more efficient gas fired plants, whose costs can be shared with other regional owners.

Solar Generation:

- Install new solar projects on a stand-alone basis.
- Couple intermittent solar generation with flexible natural gas plant alternatives.

Rely on the Market:

- Acquire 100% of Sikeston's needs from the market.
- Acquire power from the market during the transition from coal to support other alternatives selected.

Battery Storage:

- Install a battery storage facility coupled with intermittent solar generation.
- Acquire power from the market when solar is unavailable and batteries are depleted.

Small Modular Nuclear Reactor (SMR):

- Build a small-scale nuclear plant.
- Share the MWs and costs with regional owners.

POWER SUPPLY PLAN OUTCOME

CLOSURE OF SPS IS INEVITABLE – OPERATE BUT BE PREPARED TO TRANSITION

Sikeston Power Station

- Economically the best solution today
- Make prudent end-of-life investments to keep the plant competitive
- High probability that operating costs will increase
  - Emissions and other environmental regulations
  - Market conditions
  - Maintenance
- Continually monitor market conditions and update the PSP if needed

Be prepared to implement the preferred generation alternative

- Preferred alternatives require a 3–4-year head start to design, build, and put into service
- Do the work now to plan for an orderly transition from coal
- This includes:
  - Technology Selection
  - Site selection
  - Permitting
  - Preliminary engineering

SBMU EVALUATION

RESOURCE STRATEGIES CONSIDERED AND SHORTLISTED

What is a Resource Strategy:

- A singular generation alternative or combination of generation alternatives suited to the needs and circumstances of an owner

Resource Strategies considered:

- Ten (10) Resource Strategies were considered, including keeping SPS operational for the next 20 years
- Five (5) Resource Strategies were shortlisted, requiring further detailed analysis
- Strategies included some that could be “Sikeston owned” which would be wholly owned and operated on behalf of SBMU and its customers and some that could be “Regionally owned” which would provide SBMU a percentage of the electricity from a larger facility which would be owned and operated on behalf of a larger, regional group of utilities and muncipalities

Shortlisted Resource Strategies*:

- Option 1 - Sikeston Owned – All Renewable - 180 MW of Solar Generation augmented with Market Purchases
- Option 2 – Sikeston Owned - 53 MW Reciprocal Engine Generators with 108 MW of Solar Generation
- Option 2A – Sikeston Owned - 45 MW Aeroderivative Engine Generator with 128 MW of Solar Generation
- Option 3 – Regionally Owned - 70 MW Gas Combined Cycle with 72 MW of Solar Generation
- Option 4 – Regionally Owned - 35 MW Gas Reciprocal Engines with 32 MW Gas Combined Cycle and 72 MW of Solar Generation

* The shortlisted Resource Strategies may be reconfigured as market data, technologies, regulations, and costs are further evaluated and refined in the final determination process to arrive at the preferred alternative. This work is ongoing.

SBMU EVALUATION

OUR SHORTLISTING PROCESS

In order to assist SBMU with the process, the utility has contracted with Leidos Engineering and DECARB to design and develop a Power Supply Plan to aid in SBMU's long term planning. SBMU has utilized a months long, inclusive public process to ensure alternatives meet the needs and values of the community. SBMU prioritized AFFORDABILITY and RELIABILITY as evaluation criteria in determining alternatives.

Affordability

- The cost of electricity on a per kilowatt (kWh) basis
- Rate stability
- Capital costs
- Affordability

Reliability

- Fuel Availability
- Sikeston ownership of generation solution

Flexibility

- Ability to transition to other generation as conditions change
- Generation diversity

Sustainability

- Greenhouse gas reductions
- Renewable energy share
- Spurs economic development
- Impact to local labor

RESOURCE STRATEGIES: OPTION 1

Sikeston Owned
All Renewables
180 MW of Solar Generation augmented with Market Purchases

Description:

- Install 20MW of Solar - BTM in 2027
- Extend long-term SWPA hydro contract
- Install 160MW of Solar at SPS in 2030
- Purchase ~50MW of capacity from market annually
- No dispatchable capacity owned by BMU for retail load

Technology:

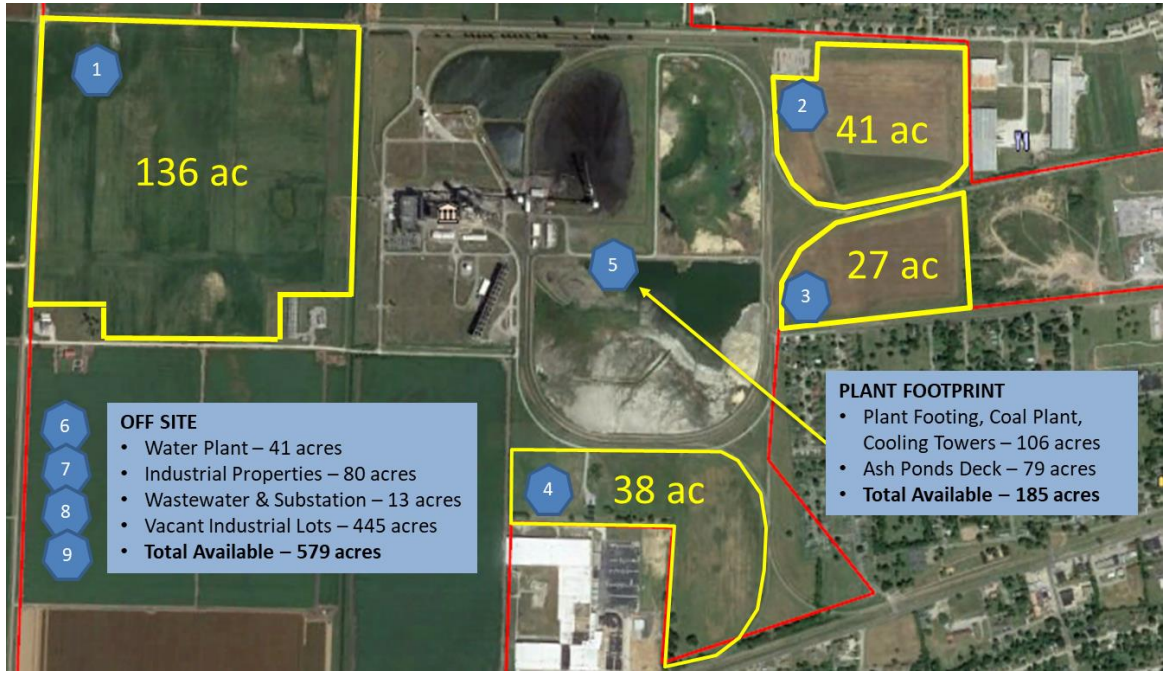
- Bi-facial Panels with Single Axis Tracking
  - Modules – Bifacial
  - Tracking – Single Axis
  - Inverters – Central Inverter
- Lead Time - 3 Years
- Operations - Intermittent Dispatch

RESOURCE STRATEGIES: OPTION 1

Sikeston Owned
All Renewables
180 MW of Solar Generation augmented with Market Purchases

- Sikeston owned and available land parcels
- Other parcels outside of Sikeston owned land will also be considered for development

Ref.	Description	Solar Potential				
		Usable Acres	Capacity (MW_{ac})	Acres per MW_{ac}	MWh per Year[2]	Capacity Factor
1	SPS Western Parcel	136	44.19	2.57	99,011	25.58%
2	SPS Northeastern Parcel	41	10.95	3.04	25,386	26.47%
3	SPS Eastern Parcel	27	7.30	3.00	16,930	26.47%
4	SPS Southeastern Parcel	38	10.95	2.81	25,386	26.47%
5	SPS Power Plant Property	185	62.05	2.50	139,633	25.69%
6	Offsite Properties Routes 824 & 62	41	10.95	3.04	25,386	26.47%
7	Industrial Properties Aggregated	80	18.26	3.64	41,477	25.93%
8	Wastewater Plant & Substation Parcel	13	3.65	2.95	8,292	25.93%
9	Vacant Industrial Park Lots	445	146.01	2.54	330,105	25.81%
Total	**All Parcels**	1,006	314.3	26.1	711,606	26.1%



RESOURCE STRATEGIES: OPTION 2

Sikeston Owned - 53 MW Reciprocal Engine Generators with 108 MW of Solar Generation

Description:

- Install 20MW of Solar - BTM in 2027
- Extend long-term SWPA hydro contract
- Install 88MW of Solar at SPS in 2027
- Install 53MW of Gas Peaking capacity, with dual fuel capability in 2030
- Purchase nominal amounts of capacity, starting in 2030
- 53 MW of dispatchable capacity for retail load

Technology:

- Wartsila Model 18v50SG (natural gas only) or 18v50DF (with dual fuel)
- Performance (at ISO Conditions) - Capacity: 53.1 MW (3 units), Net Heat Rate: 7,743 Btu/kWh (HHV)

Timeline: 3-4 years
Operations: Peaking Fully Dispatchable
Location: Sikeston Land Parcels

RESOURCE STRATEGIES: OPTION 2A

Sikeston Owned - 45 MW Aeroderivative Engine Generator with 128 MW of Solar

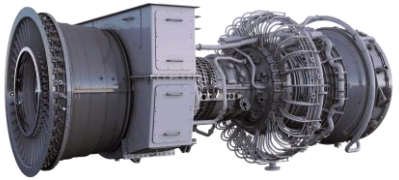
Description:

- Install 20MW of Solar - BTM in 2027
- Extend long-term SWPA hydro contract
- Install108 MW of Solar at SPS in 2027
- Install 45MW of Gas Peaking capacity, with dual fuel in 2030
- Purchase nominal amounts of capacity, starting in 2030
- 45 MW of dispatchable capacity for retail load

Technology:

- Model – LM6000PC DLE with Airless SPRINT with dual fuel
- Performance (at ISO Conditions) - Capacity: 44.1 MW;
- Net Heat Rate: 9,355 Btu/kWh (HHV)

Lead Time: 4 Years
Operations: Peaking Fully Dispatchable
Location: Sikeston Power Station



RESOURCE STRATEGIES: OPTION 3

Regionally Owned facility would provide 70 MW Gas Combined Cycle with 72 MW of Solar Generation

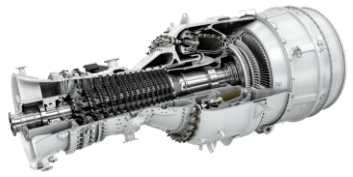
Description:

- Install 20 MW of Solar - BTM in 2027
- Extend long-term SWPA hydro contract
- Install 52 MW of Solar at SPS in 2030
- Purchase or own 70 MW of Gas Combined Cycle capacity
- Gas generation is jointly owned by Sikeston with others
- 70 MW of dispatchable capacity for retail load

Technology:

- Siemens SCC-800 Class with dual fuel
- Performance (at ISO Conditions) - Capacity: 74.7 MW;
- Net Heat Rate – 6,860 Btu/kWh (HHV)

Lead Time: 4 Years
Operations: Baseload Fully Dispatchable
Location: Sikeston Power Station



RESOURCE STRATEGIES: OPTION 4

Diverse Mix – Regionally owned facility would provide 32 MW Gas Combined Cycle Generation combined with 35 MW Gas Reciprocal Engines and 72 MW of Solar Generation

Description:

- Install 20 MW of Solar - BTM in 2027
- Extend long-term SWPA hydro contract
- Install 52 MW of Solar at SPS in 2030
- Install 35 MW of Gas Peaking capacity in 2030
- Purchase or own 32 MW of Gas Combined Cycle capacity
- Combined Cycle is jointly owned by Sikeston with others
- 67 MW of dispatchable capacity for retail load

Technology:

- Siemens SCC-800 Class with dual fuel
- Wartsila Model 18v50SG (natural gas only) or 18v50DF (dual fuel)
- Solar Bi-facial Panels with Single Axis Tracking

Lead Time: 4 Years
Operations: Baseload Fully Dispatchable
Location: Sikeston Power Station and other Sikeston Properties

RESOURCE STRATEGIES

LARGER PLANT CONFIGURATION ALTERNATIVES THAT COULD SUPPORT REGIONALLY OWNED OPTIONS 3 AND 4

Small F-Class CCGT (GE 6F.03)
- Capacity: 135 MW
- Heat Rate: 6,652 Btu/kWh (HHV)

F-Class CCGT (GE 7F.04)
- Capacity: 309 MW
- Heat Rate: 6,340 Btu/kWh (HHV)

H-Class CCGT (GE 7HA.01)
- Capacity: 438 MW
- Heat Rate: 6,078 Btu/kWh (HHV)

Combined Cycle Units:
- Performance: ISO Conditions (59°F, 60% RH, Sea Level)
- Fuel: Dual Fuel Capable
- Lead Time: 4 Years
- Operations: Baseload Fully Dispatchable
- Location: Sikeston Power Station

PROCESS MOVING FORWARD

- SBMU Board will continue its intensive evaluation process to develop the most affordable and reliable alternative to serve the community's electricity needs.
- SBMU will keep the public informed as the process continues.
- Decision on preferred alternative expected in 2024.

THANK YOU
FOR PARTICIPATING!

WE LOOK FORWARD TO COLLABORATING WITH THE RESIDENTS OF SIKESTON
TO ENSURE OUR ENERGY PROTECTION.

FOR QUESTIONS OR COMMENTS:

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