In accordance with City Council Resolution No. 1995-21, the minutes of meetings of the City Council and the Boards, Commissions, and Committees of the City shall be prepared as Action Minutes.

MINUTES
CITY COUNCIL
BANNING, CALIFORNIA

10/22/2019
SPECIAL MEETING - WORKSHOP

COUNCIL/BOARD MEMBERS PRESENT: Councilmember Happe
Councilmember Peterson
Councilmember Wallace
Mayor Pro Tem Andrade
Mayor Welch

COUNCIL MEMBERS ABSENT: None

OTHERS PRESENT: Kevin G. Ennis, City Attorney
Sonja De La Fuente, Deputy City Clerk
Art Vela, Director of Public Works/City Engineer
Adam Rush, Community Development Director
Tom Miller, Electric Utility Director
Jim Steffens, Power Resource & Revenue Administrator
Carla Young, Business Support Manager

I. CALL TO ORDER

A special meeting of the Banning City Council was called to order by Mayor Welch on October 22, 2019 at 4:01 P.M. at the Banning City Council Chamber, 99 E. Ramsey Street, Banning, California.

II. WORKSHOP

1. Integrated Resource Plan – lite (prepared by Black and Veatch)

   Tom Miller, Electric Utility Director shared a presentation (Attachment 1) with the City Council and public and answered several questions from the Council.

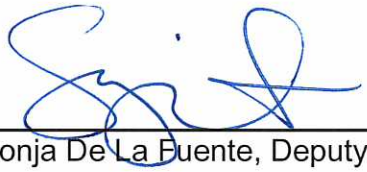
III. PUBLIC COMMENTS

Jerry Westholder asked about hydro-generators on the flume. Public Works Director/City Engineer, advised the Edison facility was decommissioned in 2008, but the City can look into reactivating. Mr. Westholder suggested building a solar farm on City-owned property by the airport. He also asked if battery storage would be lithium. Mr. Miller advised he is unsure at this time.

IV. ADJOURNMENT

By consensus, the meeting adjourned at 4:53 p.m.

Minutes Prepared by:



Sonja De La Fuente, Deputy City Clerk

The entire discussion of this meeting may be viewed here: https://banninglive.viebit.com/player.php?hash=obYx4NVtqHpX and related documents can be viewed here: https://banningca.gov/Archive.aspx?ADID=2177 or by requesting a CD or DVD at Banning City Hall located at 99 E. Ramsey Street.

ATTACHMENT 1
(Presentation)

Integrated Resource Plan - Lite

City of Banning
Banning Electric Utility
City Council Workshop
October 22, 2019

Planning Milestones

- Updated the 10-year Load Forecast 2018-2028
  - Pardee Homes completed in 10 years
  - No significant commercial or industrial additions
- Reviewed System Master Plan for 2004-2014
  - 4,160V to 12,470V conversion
  - Rebuilding Alola (Stagecoach) and Airport (Ivy) Substations
  - Automated Meter Reading and Advanced Metering Infrastructure
  - Fiber Optic Ring and SCADA
  - System Mapping
- 2005 Bond Issuance - $45.8 Million
  - 2015 Bond Refinance - $31.8 Million
- Updating the 5-year Financial Forecast 2019-2024
- Cost of Service Analysis in-progress 2019 historical year + 2020 Proforma
- General Fund Cost Allocation Model 2019
- Integrated Resource Plan – Lite for 2020-2030
  - Last Plan dated December 2003
  - San Juan Closing – 20 MW Baseload Capacity Resource
  - Biowaste Opportunities
  - Pardee Homes Microgrid
  - Local Generation Resources
  - CAISO - Resource Adequacy Requirements
- System Sectionalizing Plan
  - Distribution Automation
  - Automated Reclosers
  - Line Fusing
  - Voltage Support
  - Voltage Drop

Integrated Resource Plan External Influences

Energy Efficiency Requirements	1 Million Solar Roof-Tops	Renewable Portfolio Standards	Green House Gasses Reduction
Net Zero Building Standards	De-Carbonization Goals	Transportation Electrification	Technology Improvements

Integrated Resource Plan - *Lite*

City of Banning dba Banning Electric Utility

Not required to have a full-blown IRP

- Small Utility Exemption
- Load and Customers

Good Utility Practices

- Legally equivalent to the "Prudent Man" Concept

Internal Influences

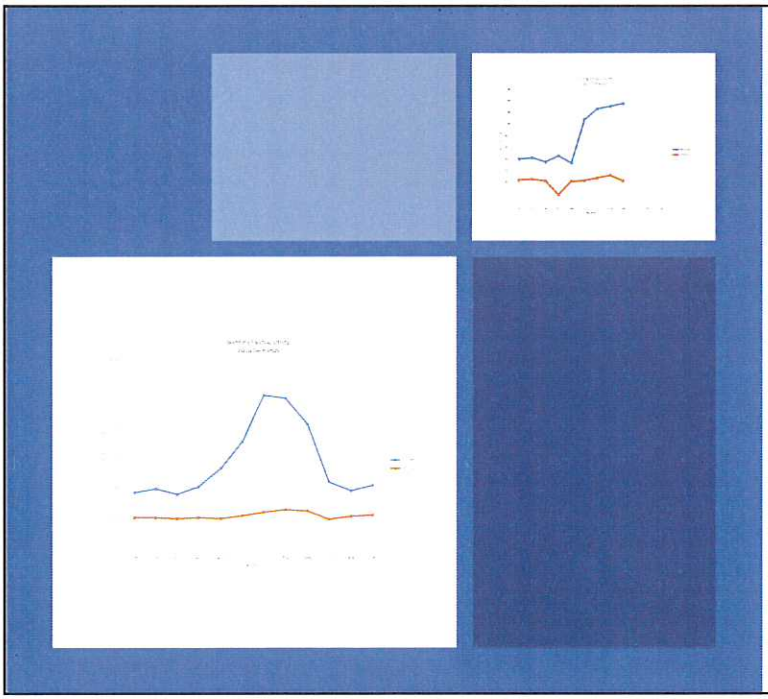
- City Manager – Biowaste Opportunities
- Electric Utility Director – Local Utility-Owned Generation
- Power Resource Manager – CAISO Resource Adequacy Requirements

Integrated Resource Plan - *Lite*

Piggy-Backed SCPPA's Contract with Black and Veatch (B&V) and issued a task order to develop a plan

B&V Deliverables included:

- Technology Assessment:
  - Solar, Wind, Biowaste, Microturbines, Fuel Cells, and Battery Storage
  - Report and Power Point Presentation of findings
- Energy Portfolio Modeling
  - 3 scenarios: Base load, expected load growth w/local generation, and resiliency (microgrid)
  - Power Presentation of findings
- Buy or Build Options
  - City ownership v. purchase power agreements



10 MW Minimum Load

Levelized Cost of Energy by Technology Summary

Technology	System Size	Economic Life (years)	Capital Cost ($/kW)	Capacity Factor (%)	Fixed O&M Cost ($/kW-Yr)*	Variable O&M Cost ($/kWh)*	Fuel Cost ($/MMBtu)*	Heat Rate (Btu/kWh)	LCOE ($/MWh)-MUNI	LCOE ($/MWh)-IPP
PV	10 MW	25	2,000	33	13	0	0	0	56	55
Wind	10 MW	25	2,888	14	40	0	0	0	206	354
Bioenergy-Small**	284 kW	25	27,025	85	0	0	0	15,000	245	483
Bioenergy-Large**	442 kW	25	22,155	85	0	0	0	15,000	201	396
Fuel Cells	1 MW	20	8,925	95	163	0	4	8,500	142	167
Microturbines	1 MW	20	4,325	92	175	0	4	10,300	116	138

*2% Escalation assumed
**Low Case Revenue from non-energy sources is assumed to be only sufficient to cover the annual O&M cost and therefore the economic model assumes they net each other out.

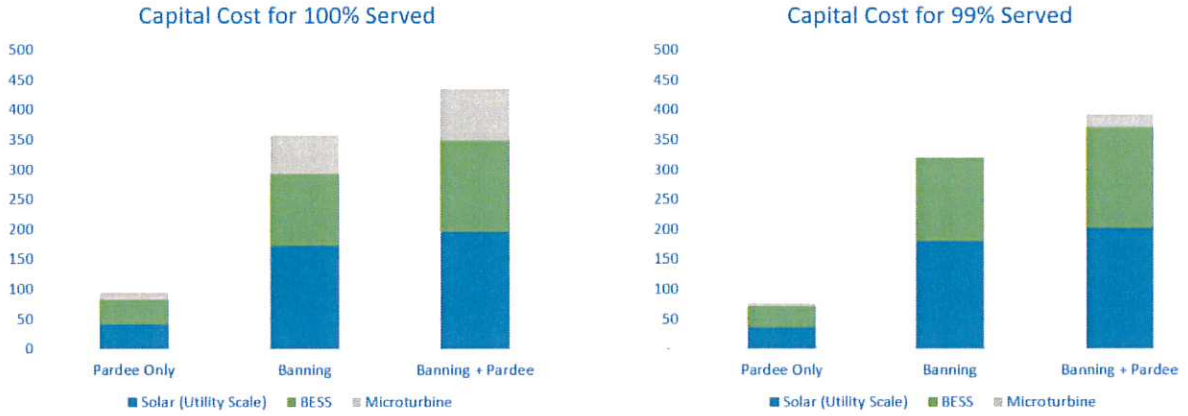
Task 1 Findings: Technology Assessment

- For a discussion starting point, we settle on 10 MWs of generation
- In B&V's expert opinion, a ***utility scale*** biowaste to energy project is not financially feasible.
- Photovoltaic generation is the most economically feasible technology based on the levelized cost of energy.
- The quality of the wind in the Pass Area is not adequate.

Task 2 Findings: Energy Portfolio Modeling

- Modelled multiple technologies to determine combinations as a Microgrid
  - Solar
  - Microturbines
  - Battery Storage
- Three cases:
  - Forecasted Load as of 2030 w/o Pardee Homes
  - Pardee Homes Load only
  - Forecasted load plus Pardee Homes (same as Itron load forecast)

Capital Costs by Scenario



Partial Microgrid Scenario (99% Served) requires lower capital.

Modeling Results for Microturbine Cases (Muni Ownership)

Scenario (100% Served)	Annual Load (MWh)	Utility-Scale PV Capacity (MW)*	Microturbine (MW)	BESS Capacity (MWh)	BESS Power (MW)	Cap Ex ($ Mil)	LCOE ($/MWh)
Pardee	42,996	28	3	136	21	$ 95	$ 228
Banning 2030	152,515	115	15	402	82	$ 358	$ 229
Banning 2030 + Pardee	195,511	131	20	507	80	$ 434	$ 218
(99% Served)							
Pardee	42,996	24	1	115	21	$ 75	$ 180
Banning 2030	152,515	120	0	463	82	$ 319	$ 195
Banning 2030 + Pardee	195,511	135	5	558	80	$ 392	$ 190

**Pardee Rooftop PV Capacity modeled is in addition to utility PV system listed above (rooftop PV modeled as a separate resource with zero capital and credit to customers equal cost of Utility-Scale PV); total capacity of 11.1 MWdc/ 9.3 MWac)*

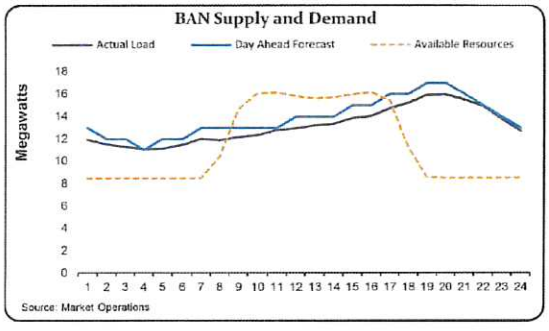
Substantially less microturbines are needed in partial microgrid case, resulting in LCOE savings.

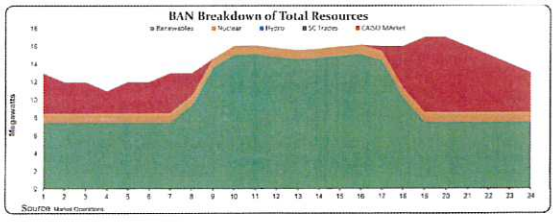
Excess/Curtailed Solar Energy in All Scenarios

- Overgeneration of solar in all cases, modeled as curtailment
- Solar is oversized in each scenario because it appears to be more cost effective to overbuild PV to cover load during low solar resource and high load periods than adding more microturbine capacity.
- Sale of energy could potentially reduce LCOE

	Excess/Curtailed Energy (MWh/yr)	
Scenarios	**100% Served**	**99% Served**
Pardee	45,543	37,251
Banning 2030	172,152	184,980
Banning 2030 + Pardee	169,645	181,582

A Routine Load Day in Banning





Overview of Resource Mix to Meet 2030 Load

- By 2030/2031, almost 11 MW of baseload energy is up for renewal
  - Landfill project will likely be retired
  - Geothermal contract will potentially be extended
- CAISO Market purchases = 58% of annual energy
- Excess energy sales from **Solar/Contracts?** = 37% of annual energy

Resources	Dispatch Priority	Contracted Capacity (MW)	Contracted Scheduled Delivery	Contract Expiration Year
Hoover Dam	Dispatchable to meet peak	2 MW, 1,847 Annually	Per Hoover Schedule B	2067
Palo Verde Nuclear Power Station	Baseload	2 MW	7x24	2045
Astoria 2 Solar	As generated	8 MW	As generated	2036
Puente Hills Landfill Gas-to-Energy	Baseload	9 MW but declining	7x24	2030
Heber South/Gould 2 Geothermal Project	Baseload	1.6 MW	7x24	2031
Anaheim - Ormat Project Firming	Firming to 2 MW	.4 MW	7x24	2031

Task 3 Results

2030 Resource Mix Considerations

- Status of baseload RE contract renewals: Depends on whether renewed contracts are also renewable baseload
- RPS Requirement (60% by 2030): Depends on RE baseload renewals and purchase of RECs-only
- Value of Excess Energy Sales: LCOE of Incremental Energy depends on this assumption.
- Minimize Market Purchases: Depends on expected cost of market purchases.

Case	Load Served	Baseload RE Contracts Renewed (MW)	Additional Solar (MW)	Percent Renewable Energy	BESS (MWh)	LCOE of Incremental Energy*($/MWh)	Excess Energy (MWh)	Market Purchases to Serve Remaining Load (MWh)
1	Pardee	2	0	28%	10	$65	523	28,608
2	Pardee	9	0	60%	10	$70	2,007	27,766
3	All Load	2	22	60%	100	$86	3,661	81,323
4	All Load	9	0	60%	10	$69	1,842	78,646
5*	All Load	9	10	74%	30	$77	10,413	59,488

**Includes (rooftop PV modeled as a separate resource with zero capital and credit to customers that equal cost of Utility-Scale PV, counts toward RPS). Accounts for Excess Energy sales @ $25/MWh*

Findings and Conclusions

- Solar and solar plus battery energy storage will likely be the most cost effective distributed energy resource (DER) options for Banning.
- Local wind will not be a good option due to poor resources, but opportunities to contract with non-local, utility-scale wind should still be considered.
- All of the other DER options (bioenergy, fuel cells, and microturbines), despite operating at baseload conditions, have much higher LCOE.
- Developing a microgrid to serve Pardee load or all of Banning by 2030 comes at a LCOE cost of $180-$220, resulting from need to oversize solar to meet seasonal needs and a large battery to store solar energy. A microturbine is still needed to cover the few hours of the year when solar plus BESS cannot meet load.
- A fully islandable, self-serving microgrid is likely not necessary for Pardee, especially at the estimated cost, but the availability of local generation and batteries to some degree will provide benefits during outages and emergency events.

Findings and Conclusions

- Given the pending expiration of up to 11 MW of baseload renewable energy, Banning needs to cover growing load by 2030 as well as meet California's renewable portfolio standard.
- In addition, Banning already faces surplus generation from existing solar contracts during all months except during the summer. This will be further exacerbated by Pardee, where almost 10 MW of rooftop solar on new homes is anticipated by 2030.
  - The sale of the excess energy may become problematic in 2030 when CAISO will see far more solar on the system, resulting in very low or negative value for the excess solar energy
- Based on the analysis, adding about 10 MWh of batteries will help mitigate part of the excess issues from anticipated solar. However, the amount of batteries need to be balanced against the forecasted value of the excess solar energy vs. procurement of market energy.
- Excess energy can be further minimized by procuring less baseload renewable energy than currently.

Recommendations

- Conduct a full IRP-like analysis that incorporates dispatch modeling and forecast market prices in 2030 and beyond, taking into account the renewable energy penetration across California. The cost of avoided market energy purchases will help inform the level of RE contracting.
- Consider building batteries totaling 5 to 10 MWh in the near-term to start capturing excess solar energy and strategically place batteries to provide local distribution system support where needed
- When baseload RE contracts expire in 2030/2031, seek to reduce the total capacity of the baseload contracts, provided the contracts are lower cost than solar plus battery storage (see Case 3).
- Consider exceeding the RPS requirement in 2030 by adding another 10 MW of solar and a larger battery (see Case 5 below), which will help reduce market purchases during the summer at a relatively modest LCOE. This also reduces reliance on market purchases from 40-45% to 30% of load.
- By 2030, a municipal financed model for solar plus battery storage could be more cost-effective than a 3rd party PPA, due to reduction in ITC, and should be considered.

Case	Load Served	Baseload RE Contracts Renewed (MW)	Additional Solar (MW)	Percent Renewable Energy	BESS (MWh)	LCOE of Incremental Energy*($/MWh)	Excess Energy (MWh)	Market Purchases to Serve Remaining Load (MWh)
5*	All Load	9	10	74%	30	$77	10,413	59,488

30

Tom's Take-a-ways

- We are going to miss the Investment Tax Credit due to timing
- Replace baseload per B&V's recommendation
- Consider adding battery storage in smaller increments in preparations for additional solar in 2030
- Be patient