

City of Banning Electric Utility

AB 2514 Energy Storage Procurement Target
Three-Year Reevaluation Report



September 26, 2017

1. City of Banning Electric Utility

The City of Banning (“City”), which comprises approximately 22.1 square miles, is located on Interstate 10 in the northwestern quadrant of Riverside County. The City is 85 miles east of Los Angeles, 27 miles east of the City of Riverside, and 20 miles west of Palm Springs.

The City of Banning’s Electric Utility (“Electric Utility”) was established in 1922, and is managed by the Electric Utility Director, under the direction and control of the City Manager and City Council. The Electric Utility is one of the smaller publicly owned electric utilities in the state of California, serving approximately 12,000 metered customers with a maximum peak demand of 47 MW.

2. Summary

Assembly Bill No. 2514 (“AB 2514”) requires each local publicly owned electric utility to initiate a process to determine appropriate targets, if any, for the utility to procure viable and cost-effective energy storage systems to be achieved by December 31, 2016, and December 31, 2021. AB 2514 indicates that publicly owned electric utilities need only adopt energy storage procurement targets if the targets are deemed to be appropriate, technologically viable, and cost effective. AB 2514 states that the governing board of each publically owned electric utility shall adopt procurement targets, if determined to be appropriate, by October 1, 2014, and reevaluate this determination not less than once every three years.

To comply with AB 2514, in March of 2012 the Electric Utility officially opened proceedings to determine if it was appropriate for the Electric Utility to set energy storage procurement targets. In conjunction with the Southern California Public Power Authority (“SCPPA”), the Electric Utility hired a third-party consultant, Navigant Consulting, Inc. (“Navigant”) to perform a study on the costs and benefits of current energy storage technologies. Navigant created a framework and decision making tool for identifying, quantifying, and monetizing the benefits of energy storage systems. The Electric Utility utilized this tool in assessing the cost effectiveness and viability of procuring energy storage systems by the established target dates. Additionally, the SCPPA Energy Storage Working Group provided SCPPA members with their energy storage research paper entitled “Summary Review of the Technological Capabilities and Economics of Energy Storage System Development.”

Based upon the modeling performed with the Navigant decision making tool, together with the SCPA Energy Storage Working Group research, the Electric Utility determined that procuring energy storage systems was not cost effective at that time. Accordingly, on September 23, 2014, the City Council adopted Resolution No. 2014-65, indicating that the Electric Utility will not be adopting energy storage procurement targets at that time, due to the lack of cost-effective options.

AB 2514 requires that the City Council shall reevaluate the energy storage determinations every three years. Accordingly, in conjunction with SCPA, the Electric Utility hired Navigant in early 2017 to perform a study on the current costs and benefits of energy storage technologies. Navigant updated its decision making tool with the latest inputs regarding energy storage costs and other relevant inputs. The Electric Utility utilized this tool in reevaluating the cost effectiveness and viability of procuring energy storage systems at this time. Additionally, in 2017 the SCPA Energy Storage Working Group hired DNV-GL to produce an energy storage cost-effectiveness methodologies report.

Based upon the modeling performed with the Navigant decision making tool, together with the SCPA Energy Storage Working Group research, the Electric Utility determined that procuring energy storage systems was still not cost effective at this time. Accordingly, on September 26, 2017, the City Council adopted Resolution No. 2017-84, indicating that the Electric Utility will not be adopting energy storage procurement targets at that time, due to the lack of cost-effective options.

Of additional relevancy, the Electric Utility has a very limited operating budget and has chosen to utilize its finite resources on the purchase of renewable energy. By January 2018, the Electric Utility's energy portfolio will be greater than 70% renewable and nearly 100% emissions free. The Electric Utility has taken substantial proactive measures to reduce greenhouse gases and to protect the environment.

The Electric Utility will continue to monitor the energy storage industry as it matures, and will reevaluate the cost effectiveness of energy storage systems as the cost structures decline and / or as the benefits increase. Of particular interest to the Electric Utility will be the cost trends of solar energy projects that are combined with battery storage. The Electric Utility anticipates the need to enter into a new Power Purchase Agreement in approximately 2022. One factor that we will be following closely is the pricing trends of combined solar/battery storage Power Purchase Agreements.

3. Navigant Decision Making Tool

In order to assist its members to comply with AB 2514, SCPA hired Navigant to perform a study on the costs and benefits of energy storage. In 2014, Navigant created a framework and decision making tool for identifying, quantifying, and monetizing benefits of energy storage projects. In the framework, potential benefits are realized differently depending on the system characteristics (e.g., location on the grid, regulatory structure, & owner). For this current 2017 evaluation, Navigant updated the tool taking advantage of Navigant's market price database, and expertise in energy markets, for the latest in energy and storage costs.

The decision making tool is based in Microsoft Excel and takes a variety of inputs. The user first enters the project location, owner, regulatory environment and technology type. Next, the user enters cost and performance information such as installed cost, operation and maintenance costs, round trip efficiency and cycle life. Then the user selects which applications to analyze. Based upon the applications selected, the user is prompted to enter inputs to help calculate benefits, such as amount of energy storage dispatched by application, market prices and rates structures. Finally, the user has the option of selecting to run various scenarios. After inputting all the necessary information, the tool presents the net present costs and benefits of the applicable energy storage project.

4. Enclosures

The following items are enclosed with this report:

- City of Banning Resolution No. 2012-29, opening the proceedings to determine the appropriateness of energy storage procurement targets.
- City of Banning Resolution No. 2014-65, indicating that it was not cost effective for the Electric Utility to adopt energy storage procurement targets at that time, due to the lack of cost-effective options.
- City of Banning Resolution No. 2017-84, indicating that it is still not cost effective for the Electric Utility to adopt energy storage procurement targets at this time, due to the lack of cost-effective options.
- Sample model run of the current Navigant decision making tool.

The applications that the Electric Utility can use for energy storage is limited for several reasons. First, the Electric Utility is not its own balancing authority. Energy

storage systems tend to be more valuable when a utility is in charge of its own balancing authority. Second, although the Electric Utility is part of the CAISO, we are not directly connected to the high voltage grid. We are connected through Edison's distribution system. This arrangement makes it difficult to utilize energy storage to generate revenues via selling ancillary services. Finally, the Electric Utility does not have any solar or wind farms in its territory, a factor that limits the value of energy storage for renewable energy integration or shifting.

Accordingly, the attached model run was performed using the most effective use of energy storage for the Electric Utility, which is wholesale energy arbitrage.

RESOLUTION NO 2012-29

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BANNING UPDATING THE STATUS OF BANNING ELECTRIC DEPARTMENT ENERGY STORAGE ACTIVITIES AND OPENING A PROCEEDING TO DETERMINE APPROPRIATE ENERGY STORAGE TARGETS

WHEREAS, the City of Banning owns and operates its Municipal Electric Utility; and

WHEREAS, Assembly Bill 2514 (AB 2514) requires that the governing board of a publicly owned electric utility open a proceeding by March 2012 to determine appropriate targets, if any, for procuring technically viable and cost-effective energy storage systems; and

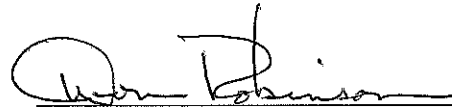
WHEREAS, under AB 2514 the City Council is required by October 1, 2013 to adopt an initial energy storage system procurement target, if determined to be appropriate, to be achieved by December 31, 2015, with a second target to be achieved by December 31, 2020; and

WHEREAS, City Staff will continue to evaluate viable and cost-effective energy storage system options, and will report back to Council by October 1, 2013;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Banning as follows:

SECTION 1: Adopt Resolution 2012-29 and authorize the Mayor to sign said resolution.

PASSED, APPROVED AND ADOPTED this 27th day of March, 2012.



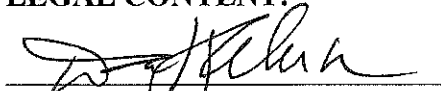
Don Robinson, Mayor
City of Banning

ATTEST:



Marie A. Calderon, City Clerk

APPROVED AS TO FORM AND LEGAL CONTENT:

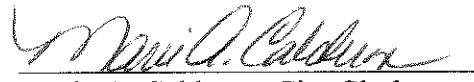


David J. Aleshire, City Attorney
Aleshire & Wynder, LLP

CERTIFICATION

I, Marie A. Calderon, City Clerk of the City of Banning, California, do hereby certify that the foregoing Resolution No. 2012-29 was duly adopted by the City Council of the City of Banning, California, at a regular meeting thereof held on the 27th day of March, 2012, by the following vote, to wit:

AYES: Councilmembers Botts, Franklin, Hanna, Machisic, Mayor Robinson
NOES: None
ABSTAIN: None
ABSENT: None



Marie A. Calderon, City Clerk
City of Banning, California

RESOLUTION NO 2014-65

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BANNING ACCEPTING THE RECOMMENDATIONS OF THE BANNING ELECTRIC UTILITY ENERGY STORAGE STUDY AND DETERMINING THAT IT IS NOT COST EFFECTIVE FOR THE ELECTRIC UTILITY TO ADOPT ENERGY STORAGE TARGETS

WHEREAS, the City of Banning owns and operates its Municipal Electric Utility; and

WHEREAS, Assembly Bill 2514 (AB 2514) requires by October 1, 2014 that the governing board of a publicly owned electric utility adopt an initial energy storage system procurement target, if determined to be appropriate, to be achieved by December 31, 2016, with a second target to be achieved by December 31, 2021; and

WHEREAS, the Banning Electric Utility, in conjunction with other Southern California Public Power Authority members, obtained the services of Navigant Consulting for the purpose of determining the cost benefits of energy storage; and

WHEREAS, Navigant Consulting created a framework and decision making tool for identifying, quantifying, and monetizing the benefits of energy storage projects. The tool has gone through extensive review and usage. Sandia National Labs and the US Department of Energy (DOE) conducted formal peer reviews of the modeling framework. The DOE has adopted this framework for use by 16 recipients of the Smart Grid Demonstration program, and the framework has been presented at numerous energy storage conferences; and


WHEREAS, the Banning Electric Utility utilized the Navigant Consulting tool to perform an energy storage study. The study determined that it was not cost effective, and therefore not appropriate, for the Banning Electric Utility to adopt energy storage procurement targets for the dates indicated in AB 2514.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Banning as follows:


SECTION 1: Adopt Resolution 2014-65 acknowledging that the City of Banning Electric Utility will not be adopting energy storage procurement targets at this time due to the lack of cost-effective options, and authorize the Mayor to sign said resolution.

SECTION 2: The Electric Utility Director will reevaluate this energy storage procurement target decision within three years as required by AB 2514.

PASSED, APPROVED AND ADOPTED this 23rd day of September, 2014.

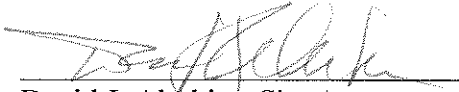

Deborah Franklin, Mayor
City of Banning

ATTEST:



Marie A. Calderon, City Clerk

**APPROVED AS TO FORM AND
LEGAL CONTENT:**



David J. Aleshire, City Attorney
Aleshire & Wynder, LLP

CERTIFICATION

I, Marie A. Calderon, City Clerk of the City of Banning, California, do hereby certify that the foregoing Resolution No. 2014-65 was duly adopted by the City Council of the City of Banning, California, at a regular meeting thereof held on the 23rd day of September, 2014, by the following vote, to wit:

AYES: Councilmembers Miller, Peterson, Welch, Westholder, Mayor Franklin

NOES: None

ABSTAIN: None

ABSENT: None



Marie A. Calderon, City Clerk
City of Banning, California

RESOLUTION 2017-84

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BANNING, CALIFORNIA, ACCEPTING THE RECOMMENDATIONS OF THE BANNING ELECTRIC UTILITY ENERGY STORAGE THREE-YEAR REEVALUATION STUDY DETERMINING THAT IT IS STILL NOT COST EFFECTIVE FOR THE ELECTRIC UTILITY TO ADOPT ENERGY STORAGE TARGETS

WHEREAS, the City of Banning owns and operates its Municipal Electric Utility; and

WHEREAS, Assembly Bill 2514 (AB 2514) required by October 1, 2014 that the governing board of a publicly owned electric utility adopt an initial energy storage system procurement target, if determined to be appropriate, to be achieved by December 31, 2016, with a second target to be achieved by December 31, 2021; and

WHEREAS The City Council of the City of Banning adopted Resolution 2014-65 on September 23, 2014 determining that it was not cost effective for the Electric Utility to adopt energy storage targets; and

WHEREAS, AB 2514 requires that electric utilities reevaluate their energy storage target determinations every three years; and

WHEREAS, the Banning Electric Utility, in conjunction with other Southern California Public Power Authority (SCPPA) members, obtained the services of Navigant Consulting (Navigant) for the purpose of reevaluating the cost benefits of energy storage; and

WHEREAS, Navigant created a framework and decision making tool for identifying, quantifying, and monetizing the benefits of energy storage projects; and

WHEREAS, The Banning Electric Utility utilized the Navigant tool to perform an energy storage reevaluation study. The study determined that it was still not cost effective, and therefore not appropriate, for the Banning Electric Utility to adopt energy storage targets at this time. The output of the Navigant decision making tool is attached herewith as Exhibit "A".

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Banning as follows:

SECTION 1. Adopt Resolution 2017-84 accepting the recommendations of the Banning Electric Utility energy storage three-year reevaluation study determining that it is still not cost effective for the Electric Utility to adopt energy storage targets.

SECTION 2. The Electric Utility will reevaluate this energy storage procurement target determination within another three years as required by AB 2514.

PASSED, APPROVED AND ADOPTED this 26th day of September, 2017.



George Moyer, Mayor
City of Banning

ATTEST:



Sonja De La Fuente, Deputy City Clerk
City of Banning

**APPROVED AS TO FORM AND
LEGAL CONTENT:**



John C. Cotti, Interim City Attorney
Jenkins & Hogin, LLP

CERTIFICATION:

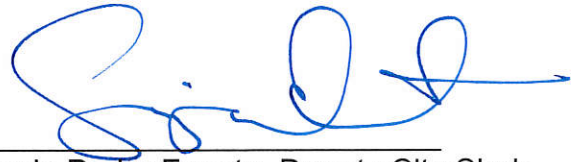
I, Sonja De La Fuente, Deputy City Clerk of the City of Banning, California, do hereby certify that the foregoing Resolution 2017-84, was duly adopted by the City Council of the City of Banning, California, at a regular meeting thereof held on the 26th day of September, 2017, by the following vote, to wit:

AYES: Council Members Andrade, Franklin, Peterson, and Welch

NOES: None

ABSTAIN: None

ABSENT: Mayor Moyer



Sonja De La Fuente, Deputy City Clerk
City of Banning, California

Exhibit “A”

Reference Case Output
Simple Payback
NPV

N/A
(\$2,882,000)

[Return to the Introduction](#)

[Data Input Module](#)

[Computational Module](#)

Select Beneficiaries
Select the stakeholder to whom the benefits should accrue.
Select only one stakeholder for each benefit.

Utility	Balancing Authority	Customer	Society	Benefits	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
1	0	0	0	Wholesale Energy Market Revenue	\$ 92,800	\$ 92,800	\$ 92,800	\$ 92,800	\$ 92,800	\$ 94,600	\$ 96,500	\$ 98,500	\$ 100,400	\$ 102,400
1	0	0	0	Capacity Market Revenue	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Ancillary Services Revenue	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Optimized Generator Operation (Non-Utility Merchant)	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000
1	0	0	0	Optimized Generator Operation (Utility/Ratepayer)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	1	0	0	Reduced Congestion Cost (DeRegulated)	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900
0	1	0	0	Reduced Congestion Cost (Regulated)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Deferred Generation Investments (DeRegulated)	\$ 210,000	\$ 210,000	\$ 210,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Deferred Generation Investments (Regulated)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	1	0	0	Deferred Transmission Investments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Deferred Distribution Investments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Reduced Electricity Losses	\$ 3,900	\$ 3,900	\$ 3,900	\$ 3,900	\$ 3,900	\$ 4,000	\$ 4,100	\$ 4,200	\$ 4,200	\$ 4,300
1	0	0	0	Reduced Electricity Cost (RegUtility)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	0	1	0	Reduced Electricity Cost (End User)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	0	1	0	Reduced Outages (Consumer)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Reduced Outages (Utility/Ratepayer)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	0	0	0	Improved Power Quality	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	0	0	1	Reduced CO2 Emissions	\$ 13,700	\$ 15,700	\$ 18,000	\$ 20,800	\$ 23,900	\$ 24,300	\$ 24,800	\$ 25,300	\$ 25,800	\$ 26,400
0	0	0	1	Reduced SOx Emissions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	0	0	1	Reduced NOx Emissions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	0	0	1	Reduced Particulate Matter Emissions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
0	0	0	1	Reduced Water Use	\$ (2,800)	\$ (3,100)	\$ (3,200)	\$ (3,700)	\$ (3,900)	\$ (3,900)	\$ (3,900)	\$ (3,900)	\$ (3,900)	\$ (3,900)
Utility Benefits					\$ 313,700	\$ 313,700	\$ 313,700	\$ 103,700	\$ 105,600	\$ 109,700	\$ 111,600	\$ 113,700	\$ 113,700	\$ 113,700
Balancing Authority					\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900	\$ 23,900
Customer					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Societal Benefits					\$ 10,900	\$ 12,600	\$ 14,800	\$ 17,100	\$ 20,000	\$ 20,400	\$ 21,400	\$ 21,900	\$ 22,500	\$ 22,500
Total Benefits					\$ 348,500	\$ 350,200	\$ 352,400	\$ 144,700	\$ 147,600	\$ 149,900	\$ 152,400	\$ 155,000	\$ 157,400	\$ 160,100
Costs														
System Cost					\$ 3,524,200									
Operating and maintenance costs					\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030
Decommissioning and Disposal Costs					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 350,000
Total Costs					\$ 3,615,230	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 91,030	\$ 441,030
Net Benefit (Cost)					\$ (3,301,530)	\$ 222,670	\$ 222,670	\$ 12,670	\$ 12,670	\$ 14,570	\$ 16,570	\$ 18,670	\$ 20,570	\$ (327,330)
Cumulative Net Benefit (Cost)					\$ (3,301,530)	\$ (3,078,860)	\$ (2,856,190)	\$ (2,843,520)	\$ (2,830,850)	\$ (2,816,280)	\$ (2,799,710)	\$ (2,781,040)	\$ (2,760,470)	\$ (3,087,800)
Simple Payback NPV					#REF!									
					(\$2,882,052)									

[See Calculations](#)

