Agenda
City Council Workshop Meeting
Tuesday, May 22, 2018
City Hall Council Chamber | 505 Swift Boulevard

City Council Workshop - 6:00 p.m. (City Hall Council Chamber)

Agenda Items:

1. Site Visit of the New City Hall Building (30 minutes)
   - Joe Schiessl, Parks and Public Facilities Director
2. Horn Rapids Solar, Storage and Training Economic Summary (20 minutes)
   - Clint Whitney, Energy Services Director
3. Smart Grid RFP Status (15 minutes)
   - Clint Whitney, Energy Services Director

Adjournment

Richland City Hall is ADA accessible with special parking and access available at the entrance facing George Washington Way. Requests for sign interpreters, audio equipment, and/or other special services must be received 48 hours prior to the City Council Workshop by calling the City Clerk's Office at 942-7388.

COUNCIL WORKSHOP COVERSHEET

Council Date: 05/22/2018

Department: Parks & Public Facilities

Key Element:

Subject:
Site Visit of the New City Hall Building (30 minutes)

Summary:
An on-site tour of the new City Hall building is planned for the beginning of the workshop.

Please be advised to wear appropriate clothing and footwear to tour the site.

Attachments:

COUNCIL WORKSHOP COVERSHEET

Council Date: 05/22/2018

Department: Energy Services

Key Element:

Subject:
Horn Rapids Solar, Storage and Training Economic Summary (20 minutes)

Summary:
The purpose of this activity will be to provide an economic analysis update on the Horn Rapids Solar, Storage, and Training project (HRSST).

The analysis was performed by Pacific Northwest National Laboratory (PNNL) and is part of a project sponsored by Energy Northwest (ENW). Other project partners include: UniEnergy Technologies (UET) for the energy storage, Quantas/Potelco for photovoltaics, Regional Education Training Center (RETC), and International Brotherhood of Electrical Workers Local 77 (IBEW Local 77) for the training site.

Attachments:

1. HRSST Presentation

Horn Rapids, Solar, Storage and Training (HRSST) Facility

May 22, 2018

Clint Whitney

Elements of HRSST

- Participants
  - Energy Northwest (ENW) as project lead
  - Quantas/Potelco for photovoltaics
  - UniEnergy Technologies (UET) for energy storage vanadium battery
  - Regional Education Training Center (RETC)
  - International Brotherhood of Electrical Workers Local 77 (IBEW Local 77) for site location
- Grant Opportunity
  - WA Department of Commerce Clean Energy Fund 2 (CEF2) with $3M matching

HRSST Project Description

- Proposed
  - Location at IBEW-77 training property adjacent to HAMMER
  - 4MW dc Photovoltaic System
    - Owned by Quantas/Potelco
  - 1MW Vanadium energy storage device
    - Owned and operated by ENW
  - Probable system interconnection and prospective off-taker of energy
    - City of Richland

Economic Analysis Elements

1. Solar Analysis by Northwest Energy Management Services (NEMS)
2. Storage Analysis by PNNL
3. Direct and Indirect Benefits Analysis by PNNL

Economics For Photovoltaics & Energy Storage

Horn Rapids Solar Storage Training Initiative Return on Investment Analysis

Scenarios

Parameter	Scenarios					
	March 6 Case	Full Benefits	Remove CO2 Tax	Remove DR	Conservative Base	Best Estimate*
ESS Scale (MW)	1	1	1	1	1	1
PV Scale (MW)	4	4	4	4	4	4
PV Costs ($/MWh)	$ 48.5	$ 38.5	$ 38.5	$ 38.5	$ 38.5	$ 38.5
PV Integration Cost ($/MWh)	$ 15	$ 15	$ 15	$ 15	$ 15	$ 15
CEF Grant	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 3,000,000
Economic Life	20 Years	25 Years	25 Years	25 Years	25 Years	25 Years
ESS Cost	$ 6,537,741	$ 6,083,803	$ 6,083,803	$ 6,083,803	$ 6,083,803	$ 6,083,803
Carbon Tax ($/ton in 2018)	$ -	$ 30	$ -	$ -	$ -	$ -
Annual Economic Impact	$ -	$ -	$ -	$ -	$ -	$ -
REC Price	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7
Demand Response ($/kW-month)	$ -	$ 4	$ 4	$ -	$ -	$ 2
Annual Energy Cost Inflation	5%	6%	6%	6%	5%	5.5%
Outage Included?	No	No	No	No	No	No
ESS BCR	0.56	1.17	1.17	0.88	0.78	0.97
PV BCR	0.76	1.15	1.05	1.05	0.98	1.11
Total BCR	0.67	1.16	1.10	0.99	0.90	1.05
Net Benefits	$ (4,100,000)	$ 2,100,000	$ 1,300,000	$ (200,000)	$ (1,200,000)	$ 700,000

*Best estimate parameters presented in expected value terms.

Expected Value Calculations

Parameter	Impact on Net Benefits	Probability of Occurrence	Expected Value
Carbon Tax ($30/ton in 2018)	$ 800,000	90.0%	$720,000
Demand Response ($4/kW-month)	$ 1,500,000	50.0%	$750,000
Higher 6% Price Growth	$ 1,000,000	50.0%	$500,000
Total Impact			$1,970,000

Electric Rate Neutral

Analysis for Energy Storage

System Cost Estimates

Scenario	Total PV Cost	Discount Rate	Inflation Rate	Project Life
Base		4.0%	3.0%	25

Year Actual	Year #	Debt Service	Financing Costs	UET Battery O&M/Warranty	Insurance	Land Lease	Site O&M (EN Labor)	Administration / Overheads	Energy Cost	Total
2018	0									
2019	1	$ 227,247	$ 60,000	$ -	$ 10,000	$ 5,000	$ 5,000	$ 12,825	$ 309.28	$ 320,381
2020	2	$ 227,247	$ 2,500	$ 45,000	$ 10,300	$ 5,150	$ 5,150	$ 13,210	$ 318.56	$ 308,875
2021	3	$ 227,247	$ 2,575	$ 45,000	$ 10,609	$ 5,305	$ 5,305	$ 13,606	$ 328.11	$ 309,974
2022	4	$ 227,247	$ 2,652	$ 45,000	$ 10,927	$ 5,464	$ 5,464	$ 14,014	$ 337.96	$ 311,106
2023	5	$ 227,247	$ 2,732	$ 45,000	$ 11,255	$ 5,628	$ 5,628	$ 14,435	$ 348.10	$ 312,272
2024	6	$ 227,247	$ 2,814	$ 45,000	$ 11,593	$ 5,796	$ 5,796	$ 14,868	$ 358.54	$ 313,472
2025	7	$ 227,247	$ 2,898	$ 45,000	$ 11,941	$ 5,970	$ 5,970	$ 15,314	$ 369.29	$ 314,709
2026	8	$ 227,247	$ 2,985	$ 45,000	$ 12,299	$ 6,149	$ 6,149	$ 15,773	$ 380.37	$ 315,983
2027	9	$ 227,247	$ 3,075	$ 45,000	$ 12,668	$ 6,334	$ 6,334	$ 16,246	$ 391.78	$ 317,295
2028	10	$ 227,247	$ 3,167	$ 45,000	$ 13,048	$ 6,524	$ 6,524	$ 16,734	$ 403.54	$ 318,647
2029	11	$ 227,247	$ 3,262	$ 45,000	$ 13,439	$ 6,720	$ 6,720	$ 17,236	$ 415.64	$ 320,039
2030	12	$ 227,247	$ 3,360	$ 45,000	$ 13,842	$ 6,921	$ 6,921	$ 17,753	$ 428.11	$ 321,472
2031	13	$ 227,247	$ 3,461	$ 45,000	$ 14,258	$ 7,129	$ 7,129	$ 18,285	$ 440.96	$ 322,949
2032	14	$ 227,247	$ 3,564	$ 45,000	$ 14,685	$ 7,343	$ 7,343	$ 18,834	$ 454.19	$ 324,470
2033	15	$ 227,247	$ 3,671	$ 45,000	$ 15,126	$ 7,563	$ 7,563	$ 19,399	$ 467.81	$ 326,037
2034	16	$ 227,247	$ 3,781	$ 45,000	$ 15,580	$ 7,790	$ 7,790	$ 19,981	$ 481.85	$ 327,651
2035	17	$ 227,247	$ 3,895	$ 45,000	$ 16,047	$ 8,024	$ 8,024	$ 20,580	$ 496.30	$ 329,313
2036	18	$ 227,247	$ 4,012	$ 45,000	$ 16,528	$ 8,264	$ 8,264	$ 21,198	$ 511.19	$ 331,025
2037	19	$ 227,247	$ 4,132	$ 45,000	$ 17,024	$ 8,512	$ 8,512	$ 21,834	$ 526.53	$ 332,788
2038	20	$ 227,247	$ 4,256	$ 45,000	$ 17,535	$ 8,768	$ 8,768	$ 22,489	$ 542.32	$ 334,604
2039	21	$ 227,247	$ 4,384	$ 67,500	$ 18,061	$ 9,031	$ 9,031	$ 23,163	$ 558.59	$ 358,975
2040	22	$ 227,247	$ 4,515	$ 67,500	$ 18,603	$ 9,301	$ 9,301	$ 23,858	$ 575.35	$ 360,902
2041	23	$ 227,247	$ 4,651	$ 67,500	$ 19,161	$ 9,581	$ 9,581	$ 24,574	$ 592.61	$ 362,886
2042	24	$ 227,247	$ 4,790	$ 67,500	$ 19,736	$ 9,868	$ 9,868	$ 25,311	$ 610.39	$ 364,931
2043	25	$ 227,247	$ 4,934	$ 67,500	$ 20,328	$ 10,164	$ 10,164	$ 26,071	$ 628.70	$ 367,036
2044	26	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2045	27	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2046	28	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2047	29	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2048	30	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
									NPV of SUM	$5,073,977

Detail of Photovoltaics and Energy Storage

Horn Rapids Solar Storage Training Initiative Return on Investment Analysis

Summary of Best Estimate

Benefits		
Avoided Power Cost	$ 5,308,386	
PV-Related Transmission Benefit	281,066	
RECs	2,950,676	
Remarketing Revenue	112,538	
Demand Charge Reduction	3,369,700	
Transmission Charge Reduction	724,219	
Conservation Voltage Reduction	131,178	
BPA Demand Response	688,748	
Total Benefits		$ 13,566,510
Costs		
Energy Storage System	$ 5,073,977	
Photovoltaics	7,802,575	
Total Costs		$ 12,876,552
Net Benefits		$ 689,958

Direct, Indirect & Induced Benefits

Direct Economic Impact of the HRSST Initiative	
Operating Budget	$360,000
3600 hotel nights @$130.00 per night	$468,000
Per Diem @132.00 (GSA) per participant	$237,600
Local Taxes Generated @ 6%	$56,592
Total Annual Direct Economic Impact	**$1,122,192**

Direct, Indirect and Induced Economic Effect of HRSST			
Income Effect from Training		Indirect Jobs Created	
Direct Effect	$1,122,192	$1,122,192/$65,000	17 jobs
Indirect Effect	$351,246	$351,246/$65,000	5 jobs
Induced Effect	$1,430,000	22 jobs created x $65,000	
Total Annual Economic Effect	$2,903,438	22 jobs created	

Summary

- Photovoltaics and energy storage components appear to be rate neutral for electric customers.
- Is there City interest from the potential of direct, indirect, and induced benefits?

COUNCIL WORKSHOP COVERSHEET

Council Date: 05/22/2018

Department: Energy Services

Key Element:

Subject:
Smart Grid RFP Status (15 minutes)

Summary:
This presentation will provide a status of the Request for Proposals (RFP) process for the AMI Smart Grid implementation for water and electric utilities. A proposed project schedule will be provided at the workshop.

Attachments: