



Pasadena Water and Power

Amendment to the Pasadena Water & Power Integrated Resource Plan (“IRP”) to Include the Repair of Gas Turbine 2 (“GT-2”)

City Council
September 18, 2017
Item 13





Recommendation

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- Approve and adopt an amendment to the 2015 IRP Update to include the repair of GT-2
- Find that approval of the proposed action is categorically exempt from the California Environmental Quality Act (“CEQA”) pursuant to CEQA Guidelines sections 15262 and 15271



Background

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- GT-2 rendered inoperable by catastrophic fire in Oct 2012
- 2015 IRP Update recommendation was to evaluate GT-2 repair, pending a market analysis
- Early actions taken:
 - > Received insurance settlement of \$7.8 million
 - > Repair cost estimated at \$9.9 - \$13.3 million
 - > Replacement cost estimated at \$32 million
- MSC update provided on 5/23/17
- MSC approved GT2 repair recommendation on 9/12/17



Background of GT-2

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- **Maximum Production**
 - > 22 MW
- **Fast Start**
 - > 10 minute start
- **Function**
 - > Reliability (2 extreme events within 10 months)
 - > Capacity (Local, Flexible and system)
 - Integrates Solar and Wind renewables



B&V Report

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- Black & Veatch (“B&V”) performed the market analysis to consider the following alternatives:
 - > Repair, replace or abandon the unit
- On 10/13/16, B&V recommended the repair of the unit for the following reasons:
 - Maintains PWP distribution system reliability
 - Lowest Cost option
 - Maintains and preserves the existing 30MW “air permits” for future possible on-site generation needs



Lowest Cost Option

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- Estimated cost of Repairs
 - > \$451-\$606/kW
- B&V Report
 - 28 new projects referenced in the analysis
 - Average cost \$1,078/kW
 - » Range (\$667-\$1,800/kW)
- Transmission upgrades
 - High Cost (approx. \$200 Million)
 - Time to implement (10 or more years)



B&V Findings

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- **Additional considerations:**
 - > Market opportunities facilitate cost recovery in 10-17 years:
 - Resource Adequacy and Local Capacity Requirements for self-use or sale
 - Integration of intermittent renewables and community solar
 - Sale of energy into CAISO market
 - > Provides capacity after coal-fired generation is eliminated from PWP portfolio by 2027
 - > Increased reliability and reduced operating costs with upgraded control systems for GT-1 and GT-2



Examples of Extreme Events

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- **New Year's eve 2016**
 - > We lost a transformer at TM Goodrich
 - > 7-week outage
- **2017 Heat Wave**
 - > Transmission line outage, reducing import capability
 - > All four gas turbines operating without a margin
 - > GT5 operated 24/7 for more than 7 days



When is GT-2 needed?

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- N-1 (single largest contingency)
 - > 130 MWh import capability

System Type	System Normal			N-1		
	2017 Peak	All Time Peak (9/27/2010)	10 Year Avg. Peak	2017 Peak	All Time Peak (9/27/2010)	10 Year Avg. Peak
Peak Type						
MWh (hourly load)	315	320	304	315	320	304
TMG Import Limit	280	280	280	130	130	130
Difference	35	40	24	185	190	174
Existing Local Generation	170	170	170	170	170	170
Available Capacity (-) indicates blackouts	135	130	146	-15	-20	-4
GT 2 Capacity (if Repaired)	22	22	22	22	22	22
Available Capacity (-) indicates blackouts	157	152	168	7	2	18

Note, if the Caltech Co-Gen plant was not online, the peaks would have been higher by approximately 10 MW



Preserves Permits

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- Maintain and preserve existing 30MW “air permits” for future possible on-site generation needs



Recommendation

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- Staff agrees with B&V's recommendation to repair GT-2 to ensure reliability

- Next Steps:
 - > PWP submitted new permit to construct to SCAQMD
 - Decision Pending
 - > PWP staff will prepare and issue an RFP for a contractor
 - > PWP will select a contractor for the repair
 - > PWP will return to City Council with recommended contract award, project budget & CIP amendment (if needed)



Questions?

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- Questions?
- Appendices follow...