FILED May 31, 2016 INDIANA UTILITY REGULATORY COMMISSION

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

VERIFIED PETITION OF INDIANAPOLIS POWER &)
LIGHT COMPANY ("IPL"), AN INDIANA)
CORPORATION, FOR (1) ISSUANCE OF A)
CERTIFICATE OF PUBLIC CONVENIENCE AND)
NECESSITY FOR THE CONSTRUCTION OF A)
COMBINED CYCLE GAS TURBINE GENERATION)
FACILITY ("CCGT"); (2) ISSUANCE OF A)
CERTIFICATE OF PUBLIC CONVENIENCE AND)
NECESSITY TO CONVERT COAL FIRED)
GENERATING FACILITIES TO GAS; (3) APPROVAL)
OF THE CONSTRUCTION OF TRANSMISSION,)
PIPELINE AND OTHER FACILITIES; (4) APPROVAL OF ASSOCIATED RATEMAKING AND ACCOUNTING TREATMENT; (5) AUTHORITY TO TIMELY RECOVER 80% OF THE COSTS INCURRED DURING CONSTRUCTION AND OPERATION OF THE GAS REFUELING PROJECT THROUGH IPL'S ENVIRONMENTAL COMPLIANCE COST RECOVERY ADJUSTMENT; (6) AUTHORITY TO CREATE REGULATORY ASSETS TO RECORD (A) 20% OF THE REVENUE REQUIREMENT FOR COSTS, INCLUDING, CAPITAL, OPERATING, MAINTENANCE, DEPRECIATION TAX AND FINANCING COSTS ON THE REFUELING PROJECT WITH CARRYING COSTS AND (B) POST-IN-SERVICE ALLOWANCE FOR FUNDS USED DURING CONSTRUCTION, BOTH DEBT AND EQUITY, AND DEFERRED DEPRECIATION ASSOCIATED WITH THE PROJECTS UNTIL SUCH COSTS ARE REFLECTED IN RETAIL ELECTRIC RATES; AND (7) ISSUANCE OF A NECESSITY CERTIFICATE TO TRANSPORT NATURAL GAS IN INDIANA) CAUSE NO. 44339))))))))))))))))))

INDIANAPOLIS POWER & LIGHT COMPANY'S SUBMISSION OF SEMI-ANNUAL PROGRESS REPORT (MAY 2016)

Pursuant to the Commission's May 14, 2014 Order in this Cause, Petitioner Indianapolis

Power & Light Company ("IPL"), by counsel, hereby submits the public version of its Eagle

Valley and Harding Street Refueling semi-annual report (May 2016). The unredacted pages of the report will be submitted to the Commission under seal.

Respectfully submitted,

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ATTORNEYS FOR PETITIONER Indianapolis Power & Light Company

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing was served upon the following via electronic mail this 31st day of May, 2016.

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DMS 3998949v1

Indianapolis Power & Light Company

Cause No 44339

Eagle Valley CCGT Construction Project And Harding Street Units 5 & 6 Refueling Construction Project

Semi-Annual Update | May 2016

INDIANAPOLIS POWER & LIGHT COMPANY CAUSE NO. 44339

Eagle Valley Combined Cycle Gas Turbine (CCGT) Construction Project Semi-Annual Update | May 2016

1.0 <u>Safety</u>¹

Total cumulative Work-Hours	627,887
Lost Time Incident Rate	0.00
Days with no Lost Time Incident	407
OSHA Recordable Rate	0.63
Fatal Injury Rate	0.31

Since the last Semi-Annual Report update, the project experienced one fatality and two recordable injuries. On March 2, 2016, an over-the-road semi-tractor backed into a craft worker, which resulted in his death. As a result, the site immediately stopped work for approximately 5 days before safely bringing the craft back to work.

In the first recordable injury, a metal dust particle entered a craft worker's eye while he was welding and grinding. The craft worker was wearing standard eye protection and a face shield during the incident. Later in the day, a doctor removed the metal dust and prescribed medication to the worker. The worker returned to work the same day. Because of this incident, all chipping activities now require spoggles (protective eyewear similar to goggles) and a face-shield. The second recordable injury occurred when a craft worker was guiding a load of rebar, which shifted and strained his shoulder. The craft worker did not report the incident at the time, because he did not think it was significant. However, after experiencing pain in the following weeks, he visited a doctor who prescribed physical therapy making the incident a recordable.

For its efforts in 2015, the Project earned the prestigious 2016 Samuel Bodman III Golden Hardhat Award from AES, the parent company of IPL. This annual award is given to the safest project or business throughout all AES businesses worldwide. In addition, each year AES businesses undergo an Environmental, Health, and Safety Audit conducted by experienced professionals from other AES subsidiaries and sometimes outside safety professionals. In November 2015, the project was audited and received a "World Class" Safety designation and an "Above Average" environmental designation.

¹ Safety data is from February 9, 2015 to March 31, 2016.

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2.0 <u>Scope</u>

The Eagle Valley CCGT (combined cycle gas turbine) Project is under construction with CB&I Stone & Webster (CB&I) as the EPC Contractor (Engineer, Procure, and Construct). The EPC Agreement was executed on June 12, 2014 and notice to proceed was issued on June 20, 2014. CB&I has been working on engineering, procurement, and construction activities since that date. CB&I mobilized on March 17, 2015, and began on site construction. On December 31, 2015, the parent company of CB&I Stone & Webster sold the rights to the name "Stone & Webster". Therefore, the parent company novated the EPC contract to CBI Services, Inc. No material changes to engineering, procurement, or construction personnel took place because of the name change.

The current Project cost estimate for the CCGT remains \$590.0 million, including both the work done by CBI and the related owner's costs. The current cost estimate is below the \$612.7 million figure approved by the Commission² (both figures exclude AFUDC).

Key Project Information				
EPC Contractor	CB&	l Stone & Webster, Inc.		
EPC Contract Execution Date	June	12, 2014		
Date of Notice to Proceed	June	20, 2014		
Commercial Operations Date	Apri	l 30, 2017		
Guaranteed Max Capacity (at 88.6 °F)	671	MW		
Key Project Equipment	Purchases from inception	n to March 2015		
Equipment	Manufacturer	Model/Details		
Combustion Turbines (2)	General Electric	7FA.05		
Steam Turbine	Toshiba	TDCF-40"		
HRSG (2)	Nooter Eriksen	Triple pressure with		
		reheat		
Condenser	Thermal Engineering	Deaerating surface		
	International	condenser		
Boiler Feed Pumps (4)	Sulzer Pumps	Pumps, motors and		
		variable speed couplings		
Circ. Water Pumps (2)	Xylem Inc.	Pumps and motors		
Key Project Equipment Purchases from April 2015 to September 2015				
Main (3) & Aux.(2) Transformers	Fortune Electric Co., LTD	Transformers		
Condensate Pumps (2)	ITT Goulds Pumps Inc.	Pumps and motors		

The table below summarizes the information on the Eagle Valley CCGT and its key components:

² Re: Indianapolis Power & Light Company, Cause No. 44339, at 40 (IURC 5/14/2014) (Ordering Paragraph 2).

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Distributed Control System	Emerson Process Mgmt.	DCS
Air Compressors (2)	Atlas Copco	Air compressors and dryer
		skids
Key Project Equipment	Purchases from October 201	5 to March 2016
Balance of Plant Valves	Power House Supply Inc.	Valves
Wire & Cable	Anixter	Wire, Cable, Fiber
Balance of Plant Fabricated Pipe	CB&I Clearfield, Inc.	Pipes
High Energy Pipe Fabrication	CB&I Clearfield, Inc.	High Energy Pipe Fabrication
Standby Diesel Generator	Carolina Power Systems	Diesel Engine and
		Generator

IPL has signed a contract with Vectren to build, own and operate the lateral between the two interstate pipelines and the CCGT in Martinsville, IN. This contract was approved by the IURC on January 14, 2015 in Cause Number 44502.

The Vectren lateral connects the Project to the Texas Gas and Rockies Express pipelines, which will allow access to natural-gas commodity from western, eastern, and southern supply basins. IPL has secured 100% firm transportation on Texas Gas with access to Rockies Express on an interruptible basis. In March Vectren felled select trees associated with the Indiana Bat, took delivery of their pipeline pipe and selected their construction contractor.

3.0 Cost Management

(In \$Million)	Project Budget ³	Current Cost Estimate	Budget Project to Date	Actual Project to Date ⁴	Variance Project to Date	Forecast to Complete ⁵
EPC Contract						
Owner's Costs						
Contingency						
	\$612.7	\$590.0	\$472.0	\$470.5	\$1.5	\$119.5

Project costs remain within the forecasted completion costs.

Project to Date Costs

Owner's Project to date costs are lower than budget by approximately \$1.5 million. This is primarily due to \$0.8M slower T&D mobilization, \$0.5M insurance payment that was budgeted

⁴ Budget and Actual numbers are all as of March 2016.

³ The Commission approved a \$612.7 million budget in aggregate and not specific line-items. For ease of comparison, we have provided the approximate breakdown on the three items within this \$612.7 million total.

⁵ "Current Cost Estimate" - "Actual Project to Date" = "Forecast to Complete"

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to be expensed in one month but is being amortized over the life of the insurance contract, and \$0.2M lower compensation.

Future Costs

Total Current Costs Estimate remained unchanged at \$590M. In December, the IPL Major Construction Executive Council approved four changes including **\$100** for integration of generating assets to operations, **\$1000** for a new warehouse due to the recent decision to raze the existing warehouse at the neighboring Eagle Valley Coal Plant, **\$1000** to implement new IT Security requirements, and **\$1000** for a Digital Fault Recorder. As indicated above, the current forecasted total project cost remains at \$590 million.

Contingency Bridge (in millions)



Cash Flow Curve

As indicated in the Cash Flow Curve below, the overall Project Current Cost Estimate remains \$590 million after these changes. That estimate remains the most probable final Project cost estimate based upon the current risk assessment.

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4.0 **Project Progress and Schedule**

The EPC contract established April 30, 2017 as the completion date for the EPC Contractor. The Project continues to meet the milestones set in the EPC contract. Since the September 2015 report, the Project made progress on multiple fronts.

Vectren received notice to proceed on June 23, 2014 to construct the 13-mile natural-gas lateral. Since that time, Vectren has acquired all 61 parcels and is on schedule to meet the September 2016 deadline for completion. In addition, Vectren is obtaining environmental permits, performing land surveys, felling trees, receiving pipe and installing the gas pipeline. The company had received all environmental permits except from the U.S. Army Corp of Engineers (ACOE) as of March 2016. Vectren has now also received the ACOE permit and thus has received all necessary environmental permits.

IPL Transmission continues stringing towers off-site, and phase one is on schedule to meet the July 15, 2016 deadline for completion. Also, contractors have mobilized to build tower foundations on the Eagle Valley Coal Plant property.

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The Project installed multiple items related to the Heat Recovery Steam Generator (HRSG). All outside casings for both units have been installed. All 12 modules (tube bundles) were installed in each HRSG unit along with each unit's High Pressure drum, Intermediate Pressure drum and Low Pressure drum. Risers, Downcomers, Inlet Duct, Selective Catalytic Reactor, CO catalyst have been installed and work continues on structural steel installation.

Both gas combustion turbines and generators have been set into place, but dress out work continues to make the combustion turbines and generators fully operable.

The steam turbine generator (STG) foundation, columns, and table-top completed concrete placement. In addition, the condenser for the STG has been fully assembled in a laydown area and will be rolled under the STG table top.

The gas insulated switchyard (GIS) building has been built, and now work has begun on fitting out the control room as well as installing associated equipment.

The off-take towers standing inside the boundaries of the plant have been completed. Work continues on installing cable from the transformers to the GIS building and on to the off-take towers outside of the plant fence line.

Other concrete placements include, cooling tower basin, water treatment foundation and parts of the common area.

The plant has three main site fabricated water tanks: the Condensate Storage Tank, Demineralization Tank, and Fire Water Tank. All foundations for these tanks have been placed and tank assembly is nearing completion.

The Project asked Morgan County to restripe a portion of Blue Bluff Road, the road in front of the new plant, so that construction material delivery drivers could see a clear demarcation of the lane. The County fulfilled this request.

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Change Order #	Description	Date	Amount (\$)
1	Additional Laydown, Retention Pond	2/26/2015	
	Relocation and Well Pumps		
2	Gas Insulated Switchyard	4/17/2015	
3	Condenser Waterbox Isolation	5/12/2015	
4	Auxiliary Boiler Specification Change	7/1/2015	
5	Remove Septic from Contractor Scope	7/1/2015	

Change Orders

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7	Digital Fault Recorder	2/1/2016	
Total	Value of all Change Orders		

As of March 31, 2016, the Project stands at 72.4% complete and, as seen below in the overall progress curve, the Project is on schedule. The Project continues to progress on time and on budget.

Project Progress Curve⁶



5.0 Project Pictures

⁶ As of March 31, 2016.

<u>PUBLIC</u>

INDIANAPOLIS POWER & LIGHT COMPANY CAUSE NO. 44339



Site View

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Steam Turbine Generator Shoring and Table-Top

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Cement Pour of Steam Turbine Table Top

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Steam Turbine Generator Low Pressure Fixators

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Combustion Turbine 1 Work

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Last HRSG Module Installation

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HRSG 1 Last Drum Set

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Harding Street Units 5 & 6 Refueling Construction Project Semi-Annual Update | May 2016

1.0 <u>Safety</u>¹

Total Man-Hours	644,384
Lost Time Incident Rate	0.00
Days with No Lost Time Incident	409
OSHA Recordable Rate	0.31

2.0 <u>Scope</u>

The project converts Harding Street Station Units 5 & 6 from pulverized coal as the primary fuel and from oil as the start-up fuel, to 100% natural gas firing for both start-up and load generation with the purpose of reducing NOx and CO emissions, in compliance with US EPA Mercury and Air Toxics Standards (MATS).

A new underground line within the plant property was installed to supply the units with natural gas. The boilers were equipped with new low NOx natural gas burners and igniters, flame detection, cooling air blowers and flue gas recirculation systems. Controls systems were upgraded to include modifications to the existing combustion control system logics, burner management system logics, upgrades to the DCS, and CEMS/DAS upgrades.

IPL used a competitive bidding process to procure the major contracts for the refueling project. The scope of the Harding Street Station refueling work has expanded to include refueling of Harding Street Station Unit 7 (approved by the Commission in Cause No. 44540). The refueling of the three units at Harding Street was done consecutively and in a short time frame. Because a high degree of coordination is necessary, consolidating this work with one contractor was more efficient and resulted in less conflicts between multiple contractors that otherwise would be working in a congested site.

As explained in IPL's November 2014 and May 2015 reports, IPL explored the potential use of a firm price Engineering Procurement and Construction (EPC) contract for the refueling work for all three units. Since then and through a competitive RFP process, IPL selected Indiana Water Partners (IWP), a joint venture between Bowen Engineering and Burns & McDonnell, as an EPC Contractor with a scope

¹ Safety data is through March 31, 2016.

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of work that includes construction of the boiler modifications and other work needed to refuel HS-7 as well as HS-5 and HS-6. IPL has had good experience using the EPC method of contracting. Although unforeseen conditions and events can arise, this approach lessened the risks inherent in a multiple contract strategy on a large aggregate project.

As a result of the EPC Contract and subsequent completion of large portions of the work, the majority of the costs reflected in the estimate is now based upon executed contracts and actual costs as opposed to an engineering estimate. A full notice-to-proceed was issued for both Harding Street Units 5 & 6 and Harding Street Unit 7. The EPC contractor has now finished the majority of the work for Harding Street Units 5 & 6 as these units were placed in service on December 17 & 18, 2015, respectively. There is some remaining work that will not be installed until the fall of 2016 due to equipment deliveries and on-going design work.

The EPC contractor is currently working on the Harding Street Unit 7 work as this unit is expected to complete start-up and check out by mid-June 2016. There will also be some trailing Harding Street Unit 7 work to finish up in the fall of 2016.

The total estimated cost for both projects (Cause No. 44339 Refueling and Cause No. 44540 Refueling) is \$106.4M, reduced by \$2M from that reported in the November 2015 report, which is approximately 0.5% less than the estimated costs provided in these dockets and remains well within the +25% / -15% accuracy range described in each docketed proceeding to receive approval of the refueling work. This cost is assigned to the individual refueling projects in a manner that differs from the cost estimates presented in the above referenced proceedings. IPL's rebuttal testimony in Cause No. 44540 stated that IPL would update the Commission as part of the ongoing review process on how the EPC contract costs are assigned as part of this report.² As shown below, the estimated cost for the Harding Street Units 5 & 6 has increased from the \$36 million approved in Cause No. 44339 to approximately \$42.10 million primarily because of the EPC Contract. IPL has requested modification of the CPCNs to reflect the updated cost estimate as part of its pending ECR-26 proceeding.

² See Cause No. 44540, rebuttal testimony of IPL Witness Brad Scott, at 12-13.

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(In \$Million)	Approve	Current	Budget	Actual	Variance	Forecast
	d Cost	Cost	Project to	Project	Project	to Complete ⁶
	Estimate	Estimate ³	Date	to Date ⁴	to Date⁵	
Alstom Costs						
EPC Contractor						
Owner's Costs						
Contingency						
Total	36.0 ⁷	42.10	42.60	39.00	3.60	3.10

3.0 Cost Management

Consistent with the November 2015 Report, this table represents an EPC approach. Reports prior to May 2015 reflected the cost estimate developed by Sargent & Lundy, which was based on a multiple contract self-managed approach. Expanding the refueling work at Harding Street Station to include a third unit within a short construction period increases the challenges associated with scheduling, construction, and cost management. The risk associated with these challenges was reasonably addressed and mitigated through the use of a firm price EPC contract which inherently has less risk.



³ As noted above, the Commission approved an estimated cost of approximately \$36 million (not including Allowance for Funds Used During Construction (AFUDC)) for the Harding Street 5 & 6 Refueling Project. *Indianapolis Power & Light Company*, Cause No. 44339 (IURC 5/14/14), at 25, 40.

⁴ Budget and Actual numbers are all as of March 31, 2016.

⁵ A negative (–) variance indicates under spending.

⁶ "Forecast to Complete" + "Actual Project to Date" = "Current Cost Estimate".

⁷ Due to the revised EPC contracting approach, the allocation of the previous cost estimate does not fit into the table categories.

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To place the complete project in context, the chart below reflects the estimated cost for the entire refueling project at Harding Street Station. As stated above when the three refueling projects are considered together the total cost estimate has decreased approximately 0.5%.

(In \$Million)	IURC Approved	Current Cost	Variance
	Cost Estimate	Estimate	
Cause No. 44339 Refueling	\$36.00	\$42.10	\$6.10 ⁸
Cause No. 44540 Refueling	\$70.88 ⁹	\$64.30	(\$6.58)
Total	\$106.88	\$106.40	(\$0.48)

4.0 HSS 5 & 6 Project Progress and Schedule

Activity	Start	Finish
Pre-outage Construction Activities	05/11/15	09/18/15
Unit 5 & 6 Outage Construction	09/19/15	11/19/15
Testing and Commissioning	11/20/15	12/17/15
Unit 5 & 6 Return to Commercial Operation		12/18/2015

The EPC contractor's planned versus actual progress is as shown below.

	Planned %	Actual %
Engineering	99.7	100.0
Procurement	83.2	83.2
Construction	96.7	97.5

Engineering studies to predict planned boiler performance and emissions have been completed. Majority of the engineering and design activities are complete. A contract has been executed with Alstom for the procurement of the burners, Flue Gas Recirculation System and igniter equipment and all material has been delivered and installed. Alstom is the Original Equipment Manufacturer and was the low evaluated bid.

The air permit for conversion of Harding Street 5&6 was previously approved by the Indiana Department of Environmental Management (IDEM); IDEM has now also approved the air permit for

⁸ Revised cost estimate is within the cost estimate accuracy range from the IURC proceedings (+25%, -15%).

⁹ Excluding AFUDC and the \$4.743 million regulatory asset identified separately in Cause No. 44540 as the cost incurred to preserve the ongoing operation of HS-7.

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the conversion of Harding Street 7. In Cause Number 44552 the IURC approved the September 24, 2014 Amended and Restated Gas Transportation Agreement (the "Proposed Amendment") with Citizens Gas and IPL, which will allow for firm natural gas transportation service for the Harding Street plant beginning April of 2016. Citizens Gas has completed the work necessary for the conversion projects. IPL also contracted with Texas Gas Transmission for firm interstate natural gas transportation service to Citizens Gas beginning in April of 2016.



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