AUC
Alberta Utilities Commission

ATCO Power Canada Ltd.

Williams Alberta PDH Complex

96-MW Strathcona Cogeneration Power Plant, 240-kV Substation and Industrial System Designation

September 28, 2016

Alberta Utilities Commission
Decision 21541-D01-2016
ATCO Power Canada Ltd.
Williams Alberta PDH Complex
96-MW Strathcona Cogeneration Power Plant, 240-kV Substation
and Industrial System Designation

Proceeding 21541
Applications 21541-A001 to 21541-A003

September 28, 2016

Published by the:
Alberta Utilities Commission
Fifth Avenue Place, Fourth Floor, 425 First Street S.W.
Calgary, Alberta
T2P 3L8

Telephone: 403-592-8845
Fax: 403-592-4406

Website: www.auc.ab.ca

Alberta Utilities Commission
Calgary, Alberta

ATCO Power Canada Ltd.
Williams Alberta PDH Complex
96-MW Strathcona Cogeneration Power Plant, 240-kV Substation and Industrial System Designation

Decision 21541-D01-2016
Proceeding 21541
Applications 21541-A001 to 21541-A003

1 Decision summary

1. In this decision, the Alberta Utilities Commission must decide whether to approve three applications from ATCO Power Canada Ltd. (ATCO Power) for a 96-megawatt (MW) cogeneration power plant, a 240-kilovolt (kV) substation, and an industrial system designation (ISD) (collectively designated as Strathcona Cogeneration Plant or the proposed project). The proposed project would be located northeast of Fort Saskatchewan to support the operation of Williams Canada Propylene ULC's (Williams) Alberta propane dehydrogenation (PDH) facility and a polypropylene (PP) facility. After consideration of the record of the proceeding, and for the reasons outlined in this decision, the Commission finds that approval of the project is in the public interest having regard to the social, economic, and other effects of the project, including its effect on the environment.

2 Introduction

2. ATCO Power filed three applications with the Commission in relation to this project which is proposed to be located at the Williams Alberta PDH complex located in the southeast and northeast quarters of Section 25, Township 55, Range 22, west of the Fourth Meridian northeast of the city of Fort Saskatchewan:

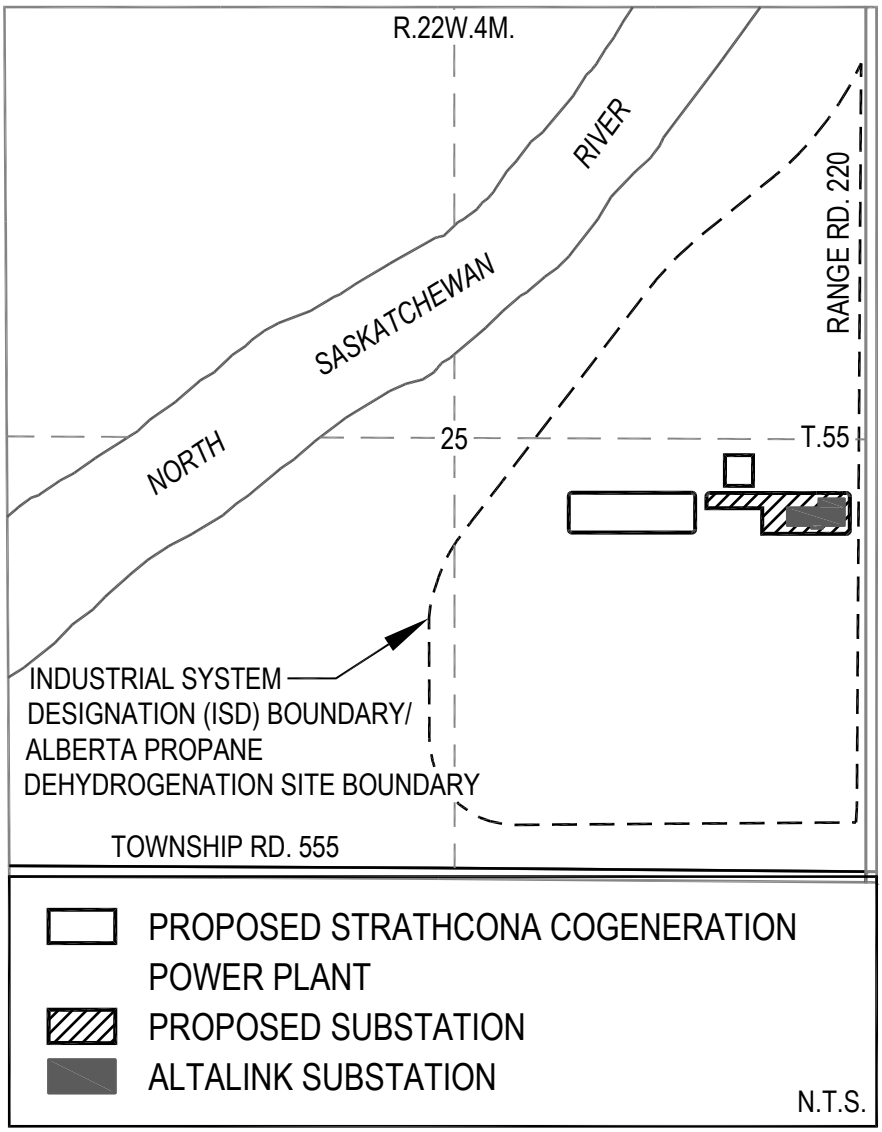
- An application to construct and operate a 96-MW cogeneration power plant for the Williams Alberta PDH and PP facilities pursuant to Section 11 of the *Hydro and Electric Energy Act*, for approval.

- An application to construct and operate a 240-kV substation, designated as Strathcona Cogeneration Plant Substation pursuant to sections 14 and 15 of the *Hydro and Electric Energy Act.*

- An application for approval of an ISD encompassing all the proposed electrical facilities at the Williams Alberta PDH complex.

3. These three applications were registered on April 26, 2016, as applications 21541-A001, 21541-A002 and 21541-A003, respectively. The Commission combined all three applications under Proceeding 21541 to consider them jointly.

4. The map below identifies the applied-for electrical facilities to be included within the proposed ISD boundary.



5. The Commission issued four rounds of information requests to ATCO Power to clarify details of the applications with respect to the environmental effects and the participant involvement program on May 17, 2016, May 26, 2016, June 2, 2016, July 14, 2016 and August 16, 2016. ATCO Power responded to the Commission's information requests on May 31, 2016, July 12, 2016, July 28, 2016 and August 26, 2016, respectively.

6. The Commission issued a notice of applications on July 22, 2016, with a deadline of August 12, 2016, to file a submission. The Commission extended the deadline for submissions to September 2, 2016 to give parties who did not receive the original notice an opportunity to file submissions. The notice was sent directly to all landowners, residents, and occupants within 2,000 metres of the project site boundary and other interested parties including government agencies, aboriginal and Métis communities, municipalities and industry associations, as identified by ATCO Power. The notice was also published on the AUC website and notification was automatically emailed to eFiling System users who had chosen to be notified of notices of application issued by the Commission. No objections or concerns were received by the submission deadlines.

3 Background

7. Williams is developing the Williams Alberta PDH complex which would include three separately owned industrial facilities:

- Williams Alberta PDH facility, which would convert propane into propylene.
- The PP facility (owner to be determined), which would convert propylene into polypropylene.
- ATCO Power Strathcona Cogeneration Plant, which would be operated as a central utilities block for the Williams Alberta PDH complex.

8. Williams received an approval[1] and an approval amendment[2] from Alberta Environment and Parks (AEP) on January 30, 2015, and October 30, 2015, respectively, to construct, operate and decommission the Williams PDH facility, under the *Environmental Protection and Enhancement Act*. A separate industrial approval application for the PP facility would be submitted to AEP in 2016.

9. The Williams Alberta PDH facility would convert propane into polymer grade propylene, a petrochemical feedstock that is primarily used to produce plastics. The polymer grade propylene would be transported to the PP facility via pipeline where it would be converted into polypropylene pellets.

10. Williams selected ATCO Power to construct, own and operate the proposed Strathcona Cogeneration Plant for the project. The cogeneration plant will provide electricity and high-pressure steam to the Williams Alberta PDH facility and the PP facility. The electricity that is generated in excess of the project's requirements would be exported to the Alberta Interconnected Electric System (AIES).

4 Discussion

4.1 The power plant and substation applications

11. ATCO Power submitted that the proposed cogeneration power plant would consist of two 48-MW natural gas turbine generators each equipped with a heat recovery steam generator, with a total generating capability of 96 MW.

12. ATCO Power submitted that the proposed Strathcona Cogeneration Plant Substation would consist of two 240/13.8-kV transformers and two 240-kV circuits, each approximately 200 metres in length, to connect the substation to a new 240-kV switching station[3]

[1] 341558-00-00.
[2] 341558-00-01.
[3] ATCO Power confirmed in its IR response round 2 (Exhibit 13, ATCOPower-AUC-2016MAY26-001 (b)) that AltaLink's 240-kV new substation is not part of the proposed ISD and AltaLink will be pursuing the required approvals independently, as a separate application.

(not included in ATCO Power's applications in Proceeding 21541), to be owned by AltaLink Management Ltd. (AltaLink).

13. Both the proposed power plant and substation would be located in the southeast quarter of Section 25, Township 55, Range 22, west of the Fourth Meridian.

14. ATCO Power explained that the Williams Alberta PDH facility would be located near other industrial facilities, such as the Pembina Redwater Fractionation and Storage facility and the Shell Scotford Refinery. It stated that the Williams Alberta PDH facility land is 94.6 hectares and has been zoned as heavy industrial land by Strathcona County. The footprint of the proposed project would be approximately 4.1 hectares.

15. ATCO Power submitted an environmental evaluation for the proposed project,[4] completed by Golder Associates Ltd. (Golder), to assess environmental effects on soil, groundwater, surface water, wetlands, vegetation, wildlife species and habitat, air quality, acoustic environment and historical resources. The environmental evaluation indicated that the potential adverse effects associated with the proposed project can be mitigated with standard mitigation measures, as described in the environmental evaluation. ATCO Power stated that the residual adverse effects of the proposed project were predicted to be insignificant.

16. ATCO Power stated that a wildlife biologist at the AEP was consulted with respect to potential effects to wildlife as a result of the project. The proposed project is located within an AEP designated Key Wildlife Biodiversity Zone (KWBZ) where there is a restricted activity period from January 15 to April 30. The biologist suggested that, as a best management practice, ATCO Power ensure that the approved mitigation plan for working within a KWBZ is followed and that construction activities do not contravene the *Wildlife Act* and regulations, particularly if occurring during sensitive breeding seasons. In response, ATCO Power submitted a KWBZ mitigation plan developed by Williams[5] and has committed to adhere to the mitigation measures described in the plan because the project construction is planned from March 2018 to July 2020, which overlaps with the restricted activity period for the KWBZ.

17. Golder completed air dispersion modelling for the proposed project by using the CALPUFF dispersion model Version 7.0 and presented it in the environmental evaluation. Golder stated that to assess air quality effects, three cases were considered: baseline case, project only case and application case. The dispersion modelling results indicated that the predicted concentrations of nitrogen dioxide (NO_2), carbon monoxide (CO) and ammonia (NH_3) within the 15 kilometre by 15 kilometre air quality study area were below their respective Alberta Ambient Air Quality Objectives (AAAQO) for the baseline case and application case in all the operating scenarios.

18. The dispersion modelling results also indicated that while the predicted concentrations of fine particulate matter ($PM_{2.5}$) were expected to exceed the 24-hour AAAQO and Canadian Ambient Air Quality Standards (CAAQS) criteria in the application case due to emissions from the existing and approved industrial sources in the study area, the contribution of the project emissions to the $PM_{2.5}$ concentrations in the study area would be minimal and no additional mitigation measures would be required. In addition, the continuous ambient air quality

[4] Appendix F of Exhibit 21541-X0003 or Appendix H of Exhibit 21541-X0002.
[5] Attachment 1 of Exhibit 21541-X0012.

monitoring in the region indicated that the baseline $PM_{2.5}$ levels would be typically below the 24-hour AAAQO criteria, with the exception of a few high $PM_{2.5}$ events that are typically attributed to forest fires, brush fires, peat fires or poor meteorological conditions, such as winter temperature inversion.

19. ATCO Power submitted a noise impact assessment (NIA) for the proposed project,[6] completed by Golder. Golder presented two noise modelling cases in the NIA – baseline case and application case. The baseline case was established by using the August 2015 issue of the Northeast Capital Industrial Association (NCIA) regional noise model, in combination with a computer model of the Williams Alberta PDH facility. The application case was established by using the August 2015 issue of the NCIA regional noise model, a computer model of the Williams Alberta PDH facility and a computer model of the Strathcona Cogeneration Plant.

20. The NIA indicated that the broadband noise levels of the baseline case at one receptor location where there is an occupied dwelling within two kilometres of the proposed Strathcona Cogeneration Plant were predicted to exceed the permissible sound level specified in Rule 012: *Noise Control*. As a result, the noise levels of the proposed project may be in compliance with Rule 012 if it can be demonstrated that there is "no net increase" in relation to the baseline case. This would mean that the addition of the Strathcona Cogeneration Plant would not increase noise levels by more than 0.4 decibels at the receptor location. The NIA also indicated that the broadband noise levels of the application case would be in compliance with Rule 012 based on "no net increase" sound levels. Further, the NIA found that there would be no low frequency noise issues at the receptor location in both the baseline case and the application case. Therefore, Golder concluded that the proposed project would be in compliance with Rule 012 in terms of broadband and low frequency noise criteria.

21. Further, Golder added that the PP facility and associated rail yard may be added to the project area in the future. Golder assessed this future case in the NIA and indicated that the cumulative noise levels would constitute a negligible increase. The NIA also indicated that there would be no potential low frequency noise issues at the receptor location in the future case.

22. ATCO Power submitted that it conducted a comprehensive participant involvement program for the proposed project in accordance with Rule 007: *Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments*. ATCO Power notified all landowners, residents, and occupants within 2,000 metres of the project site boundary and other interested parties including government agencies, aboriginal and Métis communities, municipalities and industry associations, with a project-specific information package. ATCO Power also conducted personal consultation with all landowners, residents, and occupants within 800 metres of the project site boundary and other interested parties, including regulatory agencies.

23. ATCO Power submitted that four interested parties, including two landowners, expressed concerns regarding electromagnetic interference with pipelines and telecommunication infrastructure, transmission system reliability and upgrade requirements, transmission line right-of-way, noise, air emission, stack height and lighting. To address concerns raised by two parties respecting the electromagnetic interference, ATCO Power has committed to conducting

[6] Appendix G of Exhibit 21541-X0003 or Appendix F of Exhibit 21541-X0002.

an electrical interference study during construction of the transmission connection and to implementing mitigation measures if required. Further, ATCO Power indicated that it forwarded concerns raised by one party about transmission system reliability and upgrade requirements to the responsible transmission facility operator in the area. As a result, these three parties indicated that they had no objections to the proposed project.

24. In order to resolve concerns raised by a landowner regarding noise, air emissions, stack height and lighting, ATCO Power submitted that it made several attempts to engage the landowner in consultation. ATCO Power added that while the landowner declined to participate in further consultation, ATCO Power provided information related to these concerns in its applications and also provided a copy of the industrial approval application and the applications for the proposed project to the landowner.

25. ATCO Power received *Historical Resources Act* clearance for the proposed project from Alberta Culture and Tourism on May 6, 2015.

26. ATCO Power indicated that construction of the proposed project would commence in March 2018, with a proposed completion date of August 2020.

4.2 The ISD application

27. ATCO Power proposed the ISD to include the following major electric facilities:

- A 96-MW power plant consisting of two 48-MW natural gas-fired cogeneration units.
- 240-kV Strathcona Cogeneration Plant Substation.
- A 13.8-kV and 4.16-kV distribution system.

28. ATCO Power submitted that Williams currently operates a cryogenic liquids extraction plant near Fort McMurray that processes off-gas from oil sands production. Williams also has an ownership interest in the Redwater olefins fractionation (ROF) plant. In addition, Williams owns and operates the Boreal Pipeline, which connects the extraction plant to the ROF plant.

29. Williams intends to transport propane from the ROF plant by pipeline to the proposed PDH facility and use that propane, as well as propane sourced locally, as a feedstock for the production of propylene at its PDH facility. At the PDH facility, Williams would use the high-pressure steam produced by ATCO Power's cogeneration unit to remove hydrogen from the propane. This process would yield polymer grade propylene and other by-products, such as butane, butylene, condensate and hydrogen. The butane, butylene and condensate would be returned to the ROF plant for further processing and the hydrogen would either be sent to ATCO Power's cogeneration plant to be used as a fuel source or sold locally.

30. The polymer grade propylene would be transported to the polypropylene facility via pipeline. The polypropylene facility would convert the propylene into polypropylene pellets which would be sold to market.

31. ATCO Power submitted that the proposed cogeneration plant would be used to provide high-pressure steam, electricity, and other utilities (i.e. emergency power, boiler, compressed air,

etc.) to support the operations at the PDH facility and the PP facility. ATCO Power explained that the electricity generated in excess of the project's requirements would be exported to the AIES.

32. ATCO Power submitted that Williams considered options to provide key utility services to the Williams Alberta PDH complex, which included both the use of cogeneration technology and steam generation by stand-alone boilers and power purchase from the AIES. ATCO Power conducted a high-level economic comparison for the cost of providing electricity and steam based on the following two scenarios:

- No on-site generation – capital cost of stand-alone boilers, cost of purchased natural gas and its operation and maintenance and cost of electricity to be purchased from the AIES, including capital contributions and tariff cost.
- On-site cogeneration – cost of capital, operating and tariff for steam and electricity from cogeneration, including revenue offsets from electricity to be sold to the AIES.

Table 1. Economic comparison between no on-site generation and on-site cogeneration (a period of 25 years)

NPV of cost incurred	No on-site generation (stand-alone boiler and power purchased from the AIES)	On-site generation (cogeneration)	Savings from cogeneration
Capital cost	$319,965,000	$523,271,000	($203,306,000)
Power production revenue	-	($639,593,000)	$639,593,000
Power consumption cost	$424,442,000	$424,442,000	-
Fuel consumption cost	$392,402,000	$603,215,000	($210,813,000)
T&D tariffs	$156,319,000	$29,546,000	$126,773,000
O&M cost	$124,758,000	$218,218,000	($93,460,000)
Total	$1,417,885,000	$1,159,099,000	$258,787,000

33. ATCO Power stated that Williams selected the cogeneration technology because it would meet the requirements of reliability for steam and electric power and would yield favorable economic benefits.

34. ATCO Power stated that benefits of the proposed ISD include: providing high-pressure steam and electric power to the PDH and PP facilities utilizing by-product gas from the PDH facility to generate power without being burned in flare stacks, and improved efficiency and cost-savings by sharing process products such as cooling water, compressed air and feed water. ATCO Power explained that the cogeneration would be highly efficient and environmentally attractive because it has a low emission intensity, in comparison with other types of power generation.

35. ATCO Power proposed to connect the ISD directly to the AIES through a new substation to be constructed by AltaLink. This connection will allow ATCO Power to export

surplus electric energy to the AIES and import electric energy from the AIES during planned and unplanned outages of the power plant.

36. ATCO Power stated that the proposed ISD would support an efficient exchange with the interconnected electric system of electric energy that is in excess of the industrial system's own requirements, and include improved voltage stability and reduction of losses and congestion on transmission lines because it includes local cogeneration directly adjacent to a large industrial load.

37. ATCO Power submitted that there is currently no electrical infrastructure in the vicinity of the project lands that would supply power at 13.8 kV and 4.16 kV and noted that the electric facilities proposed to form part of the ISD or to connect the ISD would be new builds.

38. The proposed ISD would not facilitate the development of independent electric systems that attempt to avoid costs associated with the interconnected electric system, facilitate uneconomical bypass of the AIES and result in duplication of the AIES because the proposed ISD will have a direct connection to the AIES.

39. ATCO Power acknowledged that the components of the industrial operation do not have common ownership but emphasized all three separately owned industrial facilities would be located within the Williams Alberta PDH complex and together will form an integrated industrial process.

40. ATCO Power stated that the three separately owned facilities and all of the industrial operations would be integrated and managed collaboratively, in accordance with the project agreements among the Williams Alberta PDH facility, the PP facility and Strathcona Cogeneration Plant.

5 Findings

5.1 The power plant and substation applications

41. The Commission finds that the applications meet the information requirements stipulated in Rule 007.

42. The Commission is satisfied that no significant environmental impacts are expected from the proposed project. The Commission accepts the Williams KWBZ mitigation plan and directs ATCO Power to implement the mitigation measures required in the plan, where applicable. The Commission acknowledges that the predicted concentrations of $PM_{2.5}$ are expected to exceed the 24-hour AAAQO and CAAQS criteria in the application case due to emissions from the existing and approved industrial sources in the study area. However, the Commission understands that the baseline $PM_{2.5}$ levels would be typically below the 24-hour AAAQO criteria, with the exception of a few high $PM_{2.5}$ events that are typically attributed to forest fires, brush fires, peat fires or poor meteorological conditions. Given these circumstances, the Commission finds that additional mitigation measures would not be required to address $PM_{2.5}$ levels from the project because the contribution of the project emissions to the $PM_{2.5}$ concentrations in the study area would be minimal.

43. The Commission recognizes that the proposed project is located in the Alberta Industrial Heartland where noise levels are monitored and managed under a Regional Noise Management Plan developed by the NCIA. The Commission finds that the noise increase from the proposed project meets the no-net increase requirement at the receptor location.

44. The Commission is satisfied that the NIA submitted by ATCO Power fulfills the requirements of Rule 012 and the predicted noise levels emitted from the proposed project are in compliance with Rule 012.

45. The Commission finds that ATCO Power's participant involvement program has been satisfactory and there are no outstanding public or industry objections or concerns. The Commission notes that no submissions were received in response to the Commission's notice of application.

46. The Commission has reviewed the applications and has determined that the technical, siting, emissions, environmental and noise effects of the power plant and substation have not raised public interest concerns.

5.2 The ISD application

47. The Commission must consider the ISD application in accordance with the principles and criteria set out in Section 4 of the *Hydro and Electric Energy Act*. Subsection 4(2) sets out a number of principles that the Commission must have regard for when considering an application for industrial system designation. Subsection 4(3) sets out specific criteria for determining whether a project should be designated as an industrial system. Subsections 4(4) and 4(5) set out further criteria for the Commission to consider when a project does not meet the criteria set out in subsection 4(3).

48. The Commission's findings on whether and how the proposed ISD satisfies these principles and criteria are addressed below.

49. Subsection 4(2) states:

> **(2)** Where the Commission is considering an application for designation as an industrial system, the Commission shall have regard to the following principles:
>
> (a) the designation must be consistent with the objective of giving appropriate economic signals so that integrated industrial processes can develop their own internal supply of electricity where that is the most economical source of generation;
>
> (b) the designation must support
>
> (i) the development of the economical supply of generation to meet the requirements of integrated industrial processes,
>
> (ii) the efficient exchange, with the interconnected electric system, of electric energy that is in excess of the industrial system's own requirements, and

(iii) the making of decisions respecting the location of generation and consumption facilities so that the efficiency of the interconnected electric system is improved, including improved voltage stability and reduction of losses and congestion on transmission lines;

(c) the designation must not facilitate

(i) the development of independent electric systems that attempt to avoid costs associated with the interconnected electric system, and

(ii) uneconomical by-pass of the interconnected electric system;

(d) duplication of the interconnected electric system must be avoided where it is more economical to use the transmission facilities or electric distribution systems owned by persons in whose service area the industrial system is or will be located.

50. Regarding the principle set out in subsection 4(2)(a), the Commission understands that Williams expressly considered using electricity purchased from the AIES for the project and that it compared the cost of this option to the co-generation option. According to the analysis conducted, the cogeneration option would yield a cumulative present value cost savings of approximately $259 million over a period of 25 years. The Commission finds the projected savings associated with the cogeneration option to be consistent with savings projected for similar projects. Having regard to the analysis conducted, the Commission is satisfied that the use of an internal supply of electricity for the project is the most economic option available for the project.

51. Regarding the principle set out in subsection 4(2)(b), the total electrical load projected for the PHD and PP facilities is estimated to be 45 MW while the proposed cogeneration facility will have a capacity of 96 MW. This means that the proposed cogeneration plant would provide sufficient capacity to meet Williams' peak load requirement while allowing excess power to be exported to the AIES.

52. Because the proposed ISD would be connected to the AIES by an existing 240-kV transmission line via a 240-kV substation with an in-out configuration, the Commission is satisfied that the use of local, on-site generation would improve voltage stability across the existing 240-kV transmission line. The Commission also finds that the transmission must-run[7] portion of the proposed cogeneration in the proposed ISD would also improve transmission system voltage stability. In addition, the Commission finds that, by locating on-site generation directly adjacent to a large industrial load, transmission losses and system congestion will be further reduced.

53. Without the proposed cogeneration power plant, the PDH and PP facilities would add approximately 45 MW of electric load to the AIES, which would have to be served by generation sources outside the PDH complex and transported over the AIES. As a result, the Commission

[7] Transmission must-run (TMR)**:** A generator required to operate at a minimum specified output level to maintain system reliability in the event of an outage to certain transmission system elements – AESO 2015 Long-term Transmission Plan.

finds that interconnecting the Williams Alberta PDH and PP project to the AIES without an ISD would increase system losses.

54. Having regard to the foregoing, the Commission is satisfied that ATCO Power's proposed ISD would improve the efficiency of the AIES because it improves transmission system voltage stability, reduces losses and congestion on transmission lines, and removes base load from the system. Accordingly, the Commission considers that the proposed ISD is consistent with the principles described in subsection 4(2)(b) of the *Hydro and Electric Energy Act*.

55. The principles set out in subsection 4(2)(c) and (d) require the applicant to demonstrate that approval of the proposed ISD will not facilitate: a) the development of independent electric systems that attempt to avoid costs associated with the interconnected electric system, b) uneconomical by-pass of the interconnected electric system and c) duplication of the interconnected electric system.

56. The Commission understands that one of the principle drivers for the proposed ISD is the need for high-pressure steam for use in the integrated industrial process. Given this need, and the demonstrated efficiency of a cogeneration solution as compared to the interconnection option, the Commission is satisfied that the use of an ISD is not being proposed to avoid the costs associated with the interconnected electrical system.

57. Although there are 240-kV facilities in the immediate project area, the Commission acknowledges that there are currently no electric systems in the vicinity of the project that supply power at 13.8-kV and 4.16-kV levels.

58. Further, ATCO Power submitted that it has requested a system access service for the proposed ISD with the AESO and the project is in the AESO's transmission connection process. ATCO Power added that it will hold both the demand transmission service contract and supply transmission service contract with the AESO.

59. Because the ISD will be directly connected to the AIES, ATCO Power will be able to export surplus electric energy to the AIES and import electric energy from the AIES during planned and unplanned outages of the power plant. The Commission observes that ATCO Power must pay tariffs for the supply of any electric energy to the AIES and for receiving electric energy from the AIES.

60. Having regard to the foregoing, the Commission is satisfied that the proposed ISD would not facilitate uneconomical bypass of the AIES and result in duplication of the AIES. Accordingly, the Commission finds that the proposed ISD does not offend the principles set out in the *Hydro and Electric Energy Act*, subsections 4(2)(c) and (d).

61. Subsection 4(3) sets out six criteria for an industrial system designation and states:

> **(3)** The Commission may make a designation under subsection (1) if the Commission is satisfied that all of the following criteria have been met:
>
> (a) the electric system includes a generating unit located on the property of the one or more industrial operations it is intended to serve, there is a high

> degree of integration of the electric system with one or more industrial operations the electric system forms part of and serves, and there is a high degree of integration of the components of the industrial operations;
>
> (b) the industrial operations process a feedstock, produce a primary product or manufacture a product;
>
> (c) there is a common ownership of all of the components of the industrial operations;
>
> (d) the whole of the output of each component within the industrial operation is used by that operation and is necessary to constitute its final products;
>
> (e) there is a high degree of integration of the management of the components and processes of the industrial operations;
>
> (f) the application to the Commission for a designation under subsection (1) demonstrates significant investment in both the expansion or extension of the industrial operations processes and the development of the electricity supply;
>
> (g) where an industrial operation extends beyond contiguous property, the owner of the industrial operation satisfies the Commission that the overall cost of providing the owner's own distribution or transmission facilities to interconnect the integral parts of the industrial operation is equal to or less than the tariffs applicable for distribution or transmission in the service area where the industrial operation is located.

62. Regarding subsection 4(3)(a), the proposed ISD includes two 48-MW gas turbine generators, each equipped with a heat recovery steam generator, which would provide power and steam for the industrial operations. As noted above, the high-pressure steam produced by the cogeneration units is required to remove hydrogen from the propane feedstock in the PDH facility and will also be used in the PP facility. Likewise, the electricity generated by the cogeneration units will be used for both industrial facilities and the processes carried out within. Further, the Commission accepts that the cogeneration units will provide other utility services to the on-site operations, including pressure regulated natural gas, boiler feedwater, demineralized water, non-drinking water, utility water and compressed air.

63. Having regard to the foregoing, the Commission is satisfied that there will be a high degree of integration between the electric system and the industrial operation in the PDH and PP facilities.

64. Subsection 4(3)(b) requires that the industrial operations process a feedstock and either produce a primary product or manufacture a product. In this case, the ISD intends to process propane as a feedstock. The Commission understands that the propane will be supplied from other industrial operations that Williams has an interest in and will be supplemented with propane purchased locally. The Commission finds that the output of the industrial process proposed at the Williams site will include both a primary product, the polymer grade propylene produced at the PDH facility and a secondary product, the polypropylene pellets to be produced

at the PP facility. Accordingly, the Commission is satisfied that the proposed ISD meets the criteria set out in subsection 4(3)(b).

65. Subsection 4(3)(c) requires common ownership of all the components of the industrial operations. In this case, the criterion described in subsection 4(3)(c) is not met because the Williams Alberta PDH complex will have three separately owned industrial facilities.

66. Subsection 4(3)(d) requires that the whole of the output of each component within the industrial operation is used by that operation and is necessary to constitute its final products.

67. As noted earlier, the proposed PDH facility will process propane with the primary goal of producing propylene. Other by-products will be produced in this process including butane, butylene and condensate which will be returned, by pipeline, to a different plant for further process. Another by-product, hydrogen, will either be used as fuel source for the cogeneration power plant or transported by pipeline to local operations for sale.

68. In the Commission's view, the criteria in subsection 4(3)(d) is not met because the whole of the output from each component of the industrial operation is not used in the operation and not necessary to constitute the final products. However, it appears to the Commission that this criteria has been substantially met because that part of the output from each industrial process that is not used in the industrial operation is nonetheless preserved and routed elsewhere for other industrial uses.

69. Subsection 4(3)(e) requires that there be a high degree of integration for management of the components and processes of the industrial operations.

70. The proposed ISD consists of three primary components: the cogeneration facility, the PDH facility and the PP facility. The Commission understands that operating agreements between the owners of the three facility agreements will address all components of the project operation and that ATCO Power will provide management oversight for the project.

71. Because it has yet to be determined who will own the PP facility, it is difficult for the Commission to conclusively determine the level of integration for the management of each component of the project. However, given the operating agreements proposed and the decision to have ATCO Power responsible for management oversight of the project, the Commission finds that this criteria has been substantially met.

72. Subsection 4(3)(f) requires a demonstration of significant investment in either the expansion or extension of the industrial operations processes and development of the electricity supply.

73. The project represents a material extension of Williams' existing operations at its cryogenic liquids extraction plant and the ROF plant. The goal of the project is the production of propylene and polypropylene pellets, and will also result in the production of some excess electricity to be made available to Alberta's electricity market. Given the scale of the project and ATCO Power's estimate that its overall costs will be over several hundred million dollars, the Commission finds that the proposed ISD satisfies the criteria set out in subsection 4(3)(f).

74. Subsection 4(3)(g) sets criteria for industrial operations that extend beyond contiguous property and does not apply to this application because the project is proposed for a contiguous property.

75. Based on the foregoing, the Commission finds that the proposed project meets the criteria set out in subsections 4(3)(a),(b) and (f) and substantially satisfies the criteria set out in subsections 4(3)(d) and (e). The proposed ISD does not meet the common ownership requirement set out in subsection 4(3)(c).

76. Subsection 4(4) provides that if a proposed project does not satisfy the criteria set out in subsections 4(3)(c) and (d) the Commission may still make an industrial system designation if it is satisfied that all of the separately owned components and all of the industrial operations are components of an integrated industrial process.

77. The Commission finds that the proposed ISD meets the secondary criteria set out in subsection 4(4). Specifically, the Commission finds that while the three components that will make up the industrial system will be separately owned, each component is being developed with the aim of creating an integrated industrial process. The cogeneration plant is designed to produce electricity, high-pressure steam and other utility by-products for the production of propylene in the PDH facility and polypropylene in the PP facility.

78. Subsection 4(5) states as follows:

> **(5)** Where the Commission is not satisfied that all of clauses (a) to (g) of subsection (3) have been met, the Commission may make a designation under subsection (1) if the Commission is satisfied that
>
> (a) all of clauses (a) to (g) of subsection (3) and subsection (4) have been substantially met, and
>
> (b) there is a significant and sustained increase in efficiency in a process of the industrial operation or in the production and consumption of electric energy by the industrial operation as a result of the integration of the electric system with the industrial operations the electric system forms part of and serves.

79. The Commission finds that proposed ISD also meets the secondary criteria set out in subsection 4(5). As noted above, the Commission is satisfied that the criteria set out in subsection 4(3) have been met or substantially met. While the Commission recognizes that the common ownership criteria set out in subsection 4(3)(c) will not be met, it is satisfied that the project will be managed and operated as an integrated industrial process and that the lack of common ownership will not impede the effective and efficient operation of the project.

80. Regarding subsection 4(5)(b), the Commission finds that ATCO Power provided sufficient information to demonstrate that the use of a cogeneration plant rather than electricity from the AIES will result in sustained increase in the efficiency of the integrated industrial operations given the project's dependence on a source of reliable, high-pressure steam. Specifically, the Commission is satisfied that the integrated industrial operation using on-site cogeneration would result in an efficiency gain of approximately 30 per cent compared to using stand-alone boilers and purchasing electricity on the Alberta market through a power purchase

arrangement. The Commission considers that the cogeneration efficiency figures presented by ATCO Power are consistent with the industry standard for cogeneration plants and therefore, the Commission finds that there is significant and sustained increased efficiency in this case.

81. Having considered all of the principles and criteria set out in Section 4 of the *Hydro and Electric Energy Act*, the Commission finds that ATCO Power's proposal substantially meets all the principles and criteria for designation and also demonstrates significant and sustained increased efficiency.

6 Decision

82. Pursuant to Section 11 of the *Hydro and Electric Energy Act*, the Commission approves the power plant application and grants to ATCO Power the approval set out in Appendix 1 – Power Plant Approval 21541-D02-2016 – September 28, 2016, to construct and operate a 96-MW cogeneration power plant.

83. Pursuant to sections 14, 15, and 19 of the *Hydro and Electric Energy Act*, the Commission approves the substation application and grants to ATCO Power the approval set out in Appendix 2 – Substation Permit and Licence 21541-D03-2016 – September 28, 2016, to construct and operate Strathcona Cogeneration Plant Substation.

84. Pursuant to Section 4 of the *Hydro and Electric Energy Act* and sections 2(1)(d) and 117 of the *Electric Utilities Act*, the Commission approves the ISD application and grants to ATCO Power the approval set out in Appendix 3 – Industrial System Designation Order 21541-D04-2016 – September 28, 2016.

85. The appendices will be distributed separately.

Dated on September 28, 2016.

Alberta Utilities Commission

(original signed by)

Neil Jamieson
Commission Member