



## **Suncor Energy Inc.**

**Amend Existing Industrial System Designation,  
Construct a New Substation and Alter Transmission Lines**

**May 15, 2013**

**The Alberta Utilities Commission**

Decision 2013-185: Suncor Energy Inc.

Amend Existing Industrial System Designation, Construct a New Substation and  
Alter Transmission Lines

Applications No. 1608919, No. 1608920, No. 1608921 and No. 1608922

Proceeding ID No. 2197

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## 1 Introduction and background

1. On December 23, 2011, the Alberta Utilities Commission (AUC or the Commission) issued Decision [2011-523](#)<sup>1</sup> and Industrial System Designation Order No. [U2011-484](#),<sup>2</sup> designating the electric system within Suncor Energy Inc.'s (Suncor) oil sands complex as an industrial system pursuant to Section 4 of the *Hydro and Electric Energy Act*, and exempting the operation of the *Electric Utilities Act* with respect to electric energy produced from and consumed by the proposed industrial system, pursuant to Section 117 of the *Electric Utilities Act*.
2. Suncor's oil sands complex includes facilities for surface and in-situ mining operations, various extraction facilities and large upgrading facilities that have been expanded over the last ten years. The facilities are located in Townships 90 to 92, Ranges 8 to 10, west of the Fourth Meridian and Townships 92 to 97, Ranges 3 to 7, west of the Fourth Meridian, approximately 47 kilometres from the town of Fort MacKay.
3. On October 18, 2012, Suncor filed four applications with the AUC.
4. In Application No. 1608919, pursuant to Section 11 of the *Hydro and Electric Energy Regulation*, Suncor filed a letter of enquiry with the AUC seeking approval to alter and operate existing 144- kilovolt (kV) transmission line 29PL7-8 in relation to the connection of the newly proposed 29EDD-160 substation. Pursuant to Permit and Licence No. [U2011-60](#),<sup>3</sup> Suncor is the operator of 144-kV transmission line 29PL7-8.
5. In Application No. 1608920, Suncor requested approval pursuant to sections 14 and 15 of the *Hydro and Electric Energy Act*, to construct and operate a new 144-kV substation (29EDD-160) and tap into the existing 144-kV transmission line 29PL7-8 to allow the connection of the new 29EDD-160 substation. Pursuant to Permit and Licence No. [U2011-481](#),<sup>4</sup>

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<sup>1</sup> Decision 2011-523 (Errata): Suncor Energy Inc. – Firebag Substations and Power Plant Expansion and Industrial System Designation Amendment, Applications No. 1607226, No. 1607227, No. 1607230, 1607233, and No. 1607641, Proceeding ID No. 1198, January 10, 2012.

<sup>2</sup> Industrial System Designation Order No. U2011-484 (Errata), Application No. 1607641, Proceeding ID No. 1198, January 10, 2012.

<sup>3</sup> Transmission Line Permit and Licence No. U2011-60, Application No. 1606991, Proceeding ID No. 1068, February 18, 2011.

<sup>4</sup> Substation Permit and Licence No. U2011-481 (Errata), Application No. 1607227, Proceeding ID No. 1198, January 10, 2012.

and Permit and Licence No. [U2011-480](#),<sup>5</sup> Suncor is the operator of 29EDD-109 substation and 29EDD-571 substation, respectively.

6. In Application No. 1608921, pursuant to Section 11 of the *Hydro and Electric Energy Regulation*, Suncor filed a letter of enquiry with the AUC requested approval to alter and operate existing 144-kV transmission line 29PL7-8 in relation to the connection of the previously approved 29EDD-109 substation and 29ED-571 substation.

7. In Application No. 1608922, pursuant to Section 4 of the *Hydro and Electric Energy Act* Suncor requested an amendment to the industrial system by adding one 12-megawatt (MW) steam turbine generator (STG 12), one 144-kV substation (29EDD-160), three 72-kV substations (29EDD-155, 29EDD-156 and 29EDD-157), altering one 144-kV transmission line (29PL7-8) and altering one 72-kV transmission line (29PL6-29).

8. On May 8, 2013, Suncor informed the Commission that it was no longer proceeding with the 12-MW steam turbine generator power plant.

9. The work proposed in the four applications above are collectively described as the “Suncor project”.

10. The Commission issued information requests to Suncor for the Suncor project applications on January 25, 2013. Suncor responded to the information requests on February 15, 2013.

11. On April 10, 2013, the Commission issued a second round of information requests to Suncor requesting additional information regarding noise related to the proposed 29EDD-160 substation. Suncor responded to the information request on April 17, 2013.

12. The Commission issued a notice of applications on March 1, 2013. The deadline for filing submissions with the AUC was on March 22, 2013.

13. In addition, on March 27, 2013, the Regional Municipality of Wood Buffalo advised that project had been circulated for comment in its municipal process and that no comments were received.

14. Six notices were returned to the AUC by Canada Post. Five of the six notices were returned to Suncor for updated contact information.

15. Suncor provided three letters of non-objection and updated the contact information for the two remaining contacts from whom mail was returned. Suncor also identified an additional stakeholder for whom updated information was available. On April 18, 2013, the Commission re-issued the notice of applications to the three parties. No objections were received.

16. The sixth stakeholder was determined to be located in Papua New Guinea. The notice was provided by email on March 18, 2013.

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<sup>5</sup> Substation Permit and Licence No. U2011-480 (Errata), Application No. 1607226, Proceeding ID No. 1198, January 10, 2012.

17. No objections or further submissions were received by the Commission.

## 2 Discussion

### 2.1 Application No. 1608922 - industrial system designation amendment

18. In Application No. 1608922, Suncor applied to amend the current Industrial System Designation Order No. U2011-484 to include the new 144-kV substation 29EDD-160, the new 72-kV 29EDD-155, 29EDD-156, and 29EDD-157 substations, one new 12-MW steam turbine generator power plant designated as STG 12, and various alterations to 72-kV transmission lines 29PL7-8 and 29PL-629. On May 8, 2013, Suncor informed the Commission that it was no longer proceeding with the 12-MW steam turbine generator power plant.

19. As submitted in its application, Suncor utilizes surface mining and steam assisted gravity drainage within its industrial system designation to remove and process oil sands into the primary product called bitumen. The surface mining process uses electric powered shovels to strip overburden and to mine the oil sands. The shovels are powered by electricity generated by co-generators and steam turbine generators. The electricity is transmitted to the mine using Suncor-owned transmission and distribution lines. In the extraction process, hot water is used to separate the bitumen from the sand. The steam used in this process is produced by co-generators and boilers. The remaining energy in the steam is also used to create electricity to power for the transportation of the bitumen that is recovered, treated and reused in other industrial processes.

20. Suncor stated that the additional proposed facilities are required to meet projected electrical load growth and increase energy efficiency within Suncor's existing industrial complex. Suncor further stated that the proposed amendments would introduce improvement in energy efficiency and reduce environmental impacts, minimize land disruption, and create self-sufficiency in water use between other facilities within the industrial complex.

21. Suncor submitted that the proposed facilities do not parallel or duplicate existing or proposed transmission or distribution facilities. In addition, there are no Alberta transmission system facilities in the areas where Suncor's proposed facilities would be located. The Suncor system was sized only to meet Suncor's industrial requirements. There was no consideration in the design for providing transmission capacity to other parties.

22. Regarding the participant involvement program, Suncor stated that over the years it has carried out consultation with local stakeholders and interested parties, and continues to provide project notifications and updates to stakeholders with respect to the proposed work. Suncor stated that no objections or concerns were raised by stakeholders.

23. In its previous Application No. 1607641, Suncor committed to amend the ownership diagram in the subsequent industrial system designation application to update names, facility capacities and ownership.<sup>6</sup> The ownership diagram submitted in Application No. 1608922<sup>7</sup> contained the amendments that Suncor committed to.

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<sup>6</sup> Application No. 1607641, Information request responses Nos. 2 and 5.

<sup>7</sup> Figure 1 on page 15 of the Application No. 1608922.

24. Since 2009, the AUC made a distinction in the orders approving Suncor's industrial system designation between traditional, stationary substations and mobile substations. Suncor stated that mobile substations are used in its mining and extraction operations to support electric shovels which are used to mine oil sands from the ground/mine face. The mobile substations are used to pump tailings back to the mine face for reclamation purposes. Suncor also submitted that mobile substations are more cost effective.

25. Suncor provided a list of mobile substations and the connected transmission lines,<sup>8</sup> all of which are operating at a nominal voltage of 72 kV.

26. Power plant unit transformers located in substations are considered an integrated part of a thermal power plant. Historically, no separate permits and licences were issued with respect to these types of substations. Suncor submitted that based on that historical practice, substations 29EDD-3, 29EDD-63, and 29EDD-5 were integrated into the associated power plants.

## **2.2 Applications No. 1608919 and No. 1608920 – new 29EDD-160 substation and connection to transmission line 29PL7-8**

27. In Applications No. 1608919 and No. 1608920, Suncor applied to alter and operate existing 144-kV transmission line 29PL7-8 in relation to the connection of the newly proposed 29EDD-160 substation. In Application No. 1608920, Suncor applied to construct and operate a 144-kV substation, designated as 29EDD-160, which would be located in the northeast quarter of Section 4, Township 95, Range 6, west of the Fourth Meridian. Because of some overlap between Applications No. 1608919 and No. 1608920, both applications are discussed in this section for ease of reading.

28. The substation major equipment will consist of:

- a) two 144/34.5-kV, 30/40/50-megavolt-ampere transformers
- b) two 144-kV circuit breakers
- c) an enclosure surrounded by a chain-link fence and other substation equipment as described in the application

29. Suncor indicated that 29EDD-160 substation would connect to Suncor's other facilities via the existing 144-kV transmission line 29PL7-8. To connect 29EDD-160 substation, the proposed alterations to transmission line 29PL7-8 are the addition of isolation switches to structures 18 and 20, a tap structure, and two short segments of transmission line from the tap structures to each transformer in the substation.

30. Suncor stated that the project would be located within the existing surface disposition from Alberta Environment and Sustainable Resources Development,<sup>9</sup> and was included in the Energy Resources Conservation Board Commercial Scheme approval,<sup>10</sup> as well as its Alberta Environment *Environmental Protection and Enhancement Act* approval.<sup>11</sup>

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<sup>8</sup> Exhibit 52 to Proceeding ID No. 2197, AUC-SUNCOR-7.

<sup>9</sup> Letter of Authority numbers MSL 101709 and MLL 120082.

<sup>10</sup> Energy Resources Conservation Board Commercial Scheme approval number 8870S, as amended.

<sup>11</sup> Alberta Environment *Environmental Protection and Enhancement Act* approval number 80105-00-00, as amended.

31. Suncor stated that the proposed substation and transmission line alteration are not in a conservation area or provincial recreation area as defined in the Lower Athabasca Regional Plan. Most of the work would be carried out on a pre-disturbed site and any work requiring new disturbances would be part of an approved oil sands scheme which was recognized in the Lower Athabasca Regional Plan as a primary land use. The project would use no new surface or groundwater and would therefore not affect surface or groundwater quality.

32. Suncor's objectives when siting the project included minimizing the total transmission line route length, the footprint of the project, and the impacts to landowners, land users and the environment. Suncor also considered the constructability of the route and site.

33. Suncor submitted a technical memorandum as an update to the noise impact assessment filed in Proceeding ID No. 1198. This noise impact assessment was completed in June 2006 for Suncor's Firebag In-Situ Oil Sands Project expansion, phases 4 to 6. In response to an AUC information request for a noise impact assessment, Suncor provided a revised noise impact assessment update, a 2011 noise impact assessment update document and the 2006 noise impact assessment report. Suncor stated that, based on the predictions of the revised noise impact assessment update, the sound level contribution of the proposed substation would not increase the existing sound level at any of the receptor locations assessed. In its second response to information requests, Suncor stated that at the most impacted receptor, located 1.5 kilometres from Suncor's Firebag project lease boundary, the cumulative sound level of the proposed substation would meet the permissible sound level stipulated in AUC Rule 012: *Noise Control* (AUC Rule 012).

34. The closest permanent resident is located approximately 40 kilometres away, in the town of Fort MacKay. The closest non-permanent residence is a Suncor work camp located approximately 1.8 kilometres away. Suncor stated that it conducts ongoing consultation with all of its key stakeholders in the broader area, including local trappers and local communities. It stated that as part of its continuous updates, all potentially affected stakeholders were informed of the proposed facilities. Suncor stated that no concerns were raised in regards to Application No. 1608920.

35. Suncor was granted *Historical Resource Act* clearance from Alberta Culture for the footprint of the substation and transmission line alteration.

36. All costs for the substation and transmission line alterations are customer costs.

### **2.3 Application No. 1608921 - transmission line 29PL7-8 alteration to connect 29EDD-109 substation and 29EDD-571 substation**

37. In Application No. 1608921, Suncor applied to alter and operate existing 144-kV transmission line 29PL7-8 to connect to the previously approved 29EDD-109 substation and 29EDD-571 substation.

38. The proposed work would include the addition of eight poles to connect to 29EDD-571 substation. No modifications would be required to connect to 29EDD-109 substation because transmission line 29PL7-8 was initially designed and constructed to accommodate the connection to the 29EDD-109 substation.

39. The proposed work would be located within the existing approved footprint of Suncor's Firebag oil sands project. Suncor stated that no significant impacts on the environment were anticipated.
40. Suncor stated that the proposed work would have no significant impacts on landowners.
41. All costs for the transmission line alterations would be customer costs.

### **3 Findings**

#### **3.1 Facility applications**

42. The Commission finds that the applicant has demonstrated that on-site generation is the most economic and efficient source of power for the industrial system. In addition, the Commission accepts the applicant's submission that the efficiency of the interconnected electric system is improved, there is no duplication of the interconnected electric system, and that a significant investment has been demonstrated by Suncor in the expansion of its industrial operations and the development of the electricity supply. The Commission finds that the industrial system designation amendment requested in Application No. 1608922 meets the requirements of Section 4(3) of the *Hydro and Electric Energy Act*.
43. The Commission has reviewed the Suncor project applications and has determined that the technical, siting, emissions, environmental and noise aspects of the proposed substation and transmission line alterations have been met.
44. With respect to noise, Suncor provided supplemental information which included a noise impact assessment completed in 2006 for the project, a noise impact assessment update document for the project completed in 2011, and a noise impact assessment update document for the project completed in 2012. The noise information indicated that no change to the existing noise levels are expected at 1.5 kilometres from Suncor's Firebag lease boundary. Based on this information, the Commission accepts that the cumulative sound level is predicted to be in compliance with the permissible sound levels stipulated in AUC Rule 012.
45. Notwithstanding the above conclusion, the Commission directs that upon completion of any future modifications or additions to the industrial system that will emit a continuous noise source within the oil sands complex, Suncor must include a standalone noise impact assessment completed in accordance with the current AUC Rule 012.
46. The Commission recognizes that the use of mobile 72-kV substations within the industrial system is needed for Suncor's operations. The Commission grants general approval as part of the industrial system designation for changes to the existing or installation of new 72-kV electrical infrastructure servicing Suncor facilities. Notwithstanding, Suncor shall apply to the Commission with respect to any changes that would result in the potential contravention of the principles and the criteria set out in Section 4 of the *Hydro and Electric Energy Act*.
47. Suncor submitted that substations 29EDD-3, 29EDD-63 and 29EDD-5 were integrated into the associated power plants. A substation which consists of a step-up unit transformer for a generating unit is generally approved as part of the generating unit without having to issue a

separate permit to construct or licence to operate. The Commission finds that this is the case for substations 29EDD-3, 29EDD-63 and 29EDD-5.

48. Suncor conducted a participant involvement program for the Suncor project applications. Suncor advised that there were no outstanding public or government objections or concerns. No objections were received in response to the notice issued by the Commission.

49. The Commission finds that Suncor considered potential environmental impacts when siting and planning the proposed projects. The Commission accepts that the work proposed in the applications will take place on land within the existing area of Suncor's industrial system and that no adverse environmental impacts are anticipated.

50. The Commission finds that the Suncor project applications meet the requirements stipulated in AUC Rule 007: *Applications for Power Plants, Substations, Transmission Lines and Industrial System Designations*.

51. Based on the foregoing, the Commission considers the project to be in the public interest in accordance with Section 17 of the *Alberta Utilities Commission Act*.

### **3.2 Letters of enquiry**

52. In accordance with the requirements of Section 12 of the *Hydro and Electric Energy Regulation*, Suncor provided information respecting the need, nature and extent of the work proposed in Applications No. 1608919 and No. 1608921. Suncor also stated that no adverse environmental impact is anticipated by the proposed work. Based upon the information provided, Suncor has demonstrated that the proposal is of a minor nature, no other person is directly and adversely affected by the proposal and no adverse environmental impact will be caused by the proposed alterations, thereby meeting the requirements of Section 11 of the *Hydro and Electric Energy Regulation*.

## **4 Decision**

53. Pursuant to sections 14, 15 and 19 of the *Hydro and Electric Energy Act*, the Commission approves Applications No. 1608919, No. 1608920 and No. 1608921, and grants Suncor:

- Permit and Licence No. U2013-150 to construct and operate 29EDD-160 substation as set out in Appendix 1.
- Permit and Licence No. U2013-151 to alter and operate transmission line 29PL7-8 as set out in Appendix 2.

54. 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 Application No. 1608922, and grants to Suncor Order No. U2013-152 to amend the industrial system designation as set out in Appendix 3.

55. The appendices will be distributed separately.

Dated on May 15, 2013.

**The Alberta Utilities Commission**

*(original signed by)*

Tudor Beattie, QC  
Commission Member