Adjusted Metering Practice (AMP)

Revised Implementation Plan

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1. Overview of the AMP

1.1 What is the AMP

1 The AMP is a practice of contracting, measurement, and billing for system access service (SAS) at DFO substations[1] in a manner that reflects the flows to and from the transmission system. Under the AMP, contracts and measurement[2] for SAS under Rate DTS and Rate STS at DFO substations with multiple feeders will be based on the sum of the flows on individual feeders, without netting that offsets the flows on different feeders.

1.2 Compliance With the AMP

2 There are three conditions that must be satisfied for SAS at a DFO Substation to be compliant with the AMP:

SAS Agreements

- Contract capacity for the STS and DTS agreements reflect the total inflows and outflows of a substation without netting of the individual feeder flows against each other

Data Aggregation

- Measurement Point Definition Records (MPDRs) aggregate the meter data into billing data without netting of individual feeder flows against each other, and are implemented in the MDM's data system for reporting

Revenue Metering

- Revenue metering is installed that is capable of providing data at the granularity required to satisfy the Data Aggregation condition. For substations with reverse flows, this requires individual feeder level metering

3 Satisfying the above conditions may require work ranging from administrative changes such as updating SAS agreements and MPDRs (for the SAS Agreements and Data Aggregation conditions), to physical infrastructure changes at DFO substations to install feeder level metering (to satisfy the Revenue Metering condition).

4 It should be noted that AMP implementation does not, in all cases, require the installation of meters on each feeder at DFO substations.[3] If there are no inflows on any feeders at a DFO substation (i.e. no "reverse flows" onto the transmission system), then the netting of bidirectional flows is not possible and accurate contracting, measurement and billing can be achieved by meters installed at either the

[1] A transmission substation that provides system access service to an electric distribution system.

[2] If SAS contracting is based on feeder-level flows, then it follows that measurement and billing for that SAS must also be based on feeder-level flows. Separating contracting from measurement and billing would create an unworkable solution. See AESO Post-Disposition Request for Clarification (May 19, 2021) on proceeding 26215, along with Decision 26215-D02-2021.

[3] From Proceeding 27047 application, para 13.

transformer or feeder level. In short, feeder level meters are required only for those DFO substations with reverse flows.

		Has Meters at Feeder-Level	
		Y	**N**
Has Reverse Flows	**Y**	*SAS requires administrative actions to comply with the AMP*	*SAS requires physical and administrative actions to comply with the AMP*
	N	*SAS is inherently compliant with the AMP*	*SAS is inherently compliant with the AMP*

1.3 ISO Tariff and Rule Requirements Relating to the AMP

5 Proposed subsections 3.6(2) and 3.6(3) of the ISO tariff will require Rate DTS contract capacities to reflect the total outflow from a DFO substation on all feeders included under a Rate DTS SAS agreement; and require Rate STS contract capacities to reflect the total inflow into a DFO substation on all feeders included under the Rate STS SAS agreement (AMP Tariff Provisions).

6 Proposed revisions to Section 503.17 of the ISO rules, *Revenue Metering System*, will require the legal owner of a revenue meter, which in the case of a DFO substation is the TFO, to install and operate at DFO substations a revenue metering system that allows for financial settlement as required by the ISO tariff (as detailed in the AMP Tariff Provisions). The revisions proposed to Section 503.17 will also require that TFOs installing or replacing switchgear lineups at a DFO substation must, as part of that installation or replacement, also install the infrastructure capable of metering at the feeder level (Metering Infrastructure).[4]

7 Proposed subsection 3.6(5) of the ISO tariff will exempt DFOs with reverse flows from complying with the AMP Tariff provisions (which effectively exempts the SAS from complying with the AMP) where, as determined by the AESO, the DFO substation does not have meters at the feeder level nor the Metering Infrastructure that can accommodate the installation of meters at the feeder level.

1.4 Requested Timing of AUC Approval

8 The implementation dates described in this revised plan are contingent upon this revised implementation plan, including the associated ISO tariff and ISO rule provisions, being approved by the AUC with effect as of January 1, 2025, and the AUC granting the AESO's requested approval by June 1, 2024.

2. Revised Implementation Plan

2.1 Overview

9 This revised implementation plan entails updating the existing SAS at DFO substations that have feeder-level metering in place. For new and existing DFO substations where feeder-level metering or the

[4] See Appendix A – AMP Alternatives Comparison for additional details on Metering Infrastructure.

Metering Infrastructure is in place the plan will require all system access service requests (SASRs) submitted after the AMP is effective, to comply with the AMP.

10 For DFO substations that do not have feeder-level metering or Metering Infrastructure in place but have reverse flows, compliance with the AMP will not be immediately required. Instead, TFOs will be required to install the feeder-level metering to comply with the AMP when the switchgear lineup for the substation will be replaced in the future.

11 The steps to implement the AMP for SAS that is provided at the time the revised implementation plan becomes effective are as follows:

> Step 1: SAS Analysis – DFOs will analyze flows at DFO substations to determine if SAS should be updated to comply with the AMP.
> Step 2: Update Current SAS – Administrative actions are taken to ensure SAS complies with the AMP, where possible.

2.2 Step 1: SAS Analysis

12 DFOs will analyze the flows at each DFO substation to determine if there are any reverse flows, and the expected magnitude of those reverse flows as of the effective date of the AMP, due to the existence of downstream distribution-connected generation, including microgeneration (DCG). DFO substations that do not have any DCG will not have any reverse flows and therefore will not require any administrative or physical changes to comply with the AMP.

13 The determination of reverse flows will be based on the meters available at each DFO substation as of the effective date of the AMP (January 1, 2025):

- If the DFO substation has feeder level metering, then the DFO will determine if there are any reverse flows at the feeder level.
- If the DFO substation has transformer level meters, then the DFO will determine if there are any reverse flows at the transformer level.

14 The AESO's preliminary analysis of DFO substations indicates that:

	# of DFO Subs
DFO substation without feeder level metering	~70
DFO substations with feeder level metering	~380
Total DFO Substations	***~450***

15 Based on the results of Step 1, DFOs will determine if their current DTS and STS contract capacities should be updated to better reflect the magnitude of expected flows as of the AMP effective date.

16 Based on recent conversations with the DFOs, the AESO does not expect many DFO substations where the DTS contract capacity would change under the AMP. However, there will be DFO substations where the STS contract capacity would change, or a new STS contract capacity would be required, under the AMP. MPDRs will need to be updated for all DFO substations with reverse flows.

17 Based on the AESO's requested timing for AMP implementation, the Step 1 SAS analysis is planned to be completed by June 1, 2024 to allow for sufficient time to carry out the administrative actions required to update current SAS by a January 1, 2025 AMP effective date.

2.3 Step 2: Update Current SAS

18 The results of the Step 1 SAS analysis will identify the DFO substations that require administrative actions to update SAS agreements and MPDRs. The DFO will submit a request to the AESO indicating the DFO substations where the SAS should be updated, including:

- At DFO substations with feeder level metering where DTS and STS contract capacities must be updated based on feeder-level flows to comply with the AMP.
- At DFO substations without feeder level metering where DTS and STS contract capacities must be updated based on the most granular level possible based on the meters in place.

19 The AESO and the applicable meter data manager (MDM) will coordinate development and implementation of MPDRs and updating of meter data systems for all DFO substations with reverse flows. The AESO and applicable DFOs will execute new or amended SAS agreements where contract capacity changes are required. All MPDRs and SAS agreements will have an effective date of January 1, 2025.

20 Based on the information available,[5] the AESO has done some preliminary analysis of existing DFO substations as at June 2023. These numbers will be known with more certainty once the Step 1 SAS Analysis is completed:

SAS Updates	# of DFO Subs
DFO substations that do not require SAS updates	373 – 395
Update SAS, will comply with the AMP	50 – 65
Update SAS, but not compliant with the AMP	5 – 12
Total DFO Substations	***~450***

21 Based on the AESO's preliminary analysis, there will be 5 – 12 DFO substations where SAS will not be immediately compliant with the AMP on January 1, 2025. These are DFO substations that likely have reverse feeder flows, but do not have the feeder level metering that is able to measure the flows at that level. SAS at these DFO substations will become compliant with the AMP as described in subsection 2.5.

2.4 Ongoing SAS for DFOs

22 DFOs are accountable for determining whether they hold the correct SAS contract capacities at existing DFO Substations. If a change to either a DTS or STS agreement is needed, or if a new SAS agreement is needed, the DFO is required to submit a SASR to the AESO to implement the change to their SAS, pursuant to Section 3 of the ISO tariff. The AMP Tariff Provisions require that DFOs elect DTS and STS contract capacities that reflect feeder level flows to comply with the AMP. However, the AESO may not require AMP compliance until the DFO substation has feeder level metering or Metering Infrastructure in place.

[5] The AESO does not have feeder level load or generation available. The information that the AESO has available for each DFO substation is the DTS contract capacity and total MWs of DCG connected downstream of that substation. From this, the AESO can estimate, with limited accuracy, if a substation likely has reverse flows at the feeder level and will therefore require administrative actions to update its SAS.

23 If a DFO submits a SASR for new or amended SAS that includes reverse flows, then the requested DTS and STS contract capacities must reflect the following:

- If there is feeder level metering or Metering Infrastructure in place at the DFO substation, then the contract capacities must reflect the flows at the feeder level.
- If there is neither feeder level metering or Metering Infrastructure in place at the DFO substation, then the contract capacities must reflect the flows at the most granular level of metering available at the DFO substation. For example, if the DFO substation only has meter(s) at the transformer level, then SAS will be based on flows at the transformer(s).

24 The AESO will initiate a project under the *Connection Process*[6] to respond to the new SASRs. This longstanding practice will not change as a result of this revised implementation plan. As part of a connection project initiated in response to a DFO SASR, the AESO will ensure the following:

- If there is feeder level metering in place at the DFO substation, that the SAS agreements and MPDRs comply with the AMP.
- If there is neither feeder level metering or Metering Infrastructure in place at the DFO substation, that the SAS agreements and MPDRs reflect the most granular level of metering available.
- If there is Metering Infrastructure in place at the DFO substation, that the installation of meters at the feeder level is included as part of the connection project, and the subsequent SAS agreements and MPDRs reflect the feeder level metering that will be installed. The connection costs will be classified as participant-related or system-related, pursuant to the ISO tariff that is in place at the time.

2.5 Metering Infrastructure at New and Existing DFO Substations

25 Newly constructed DFO substations typically do not have reverse feeder flows upon energization. Nevertheless, new DFO substations will be required to install the Metering Infrastructure pursuant to Section 503.17 of the ISO rules, *Revenue Metering System* so that if there are reverse feeder flows in the future, the meters can easily be added so that SAS will be AMP compliant. Meters may also be installed at the time of substation construction, at the discretion of the TFO.

26 Over time, as the approximately 70 existing DFO substations with transformer level meters undergo lifecycle alterations that include the installation or replacement of switchgear lineups, the Metering Infrastructure will be installed pursuant to Section 503.17 of the ISO rules, Revenue Metering System:

- In cases where there are already reverse feeder flows at a DFO substation, the AESO will require that meters be installed with the Metering Infrastructure so that the SAS at the DFO substation can be made AMP compliant.
- In cases where there are no reverse feeder flows at a DFO substation, similar to newly constructed DFO substations, the TFO has the option to install the meters with the Metering Infrastructure.

27 The cost of installing the Metering Infrastructure, and if applicable, the cost of the meters installed at the same time as the Metering Infrastructure will follow the same cost treatment as the lifecycle work or of the construction of the new DFO substation.

[6] Each project type (connection project; behind the fence project; or contract change project) will follow its designated process.

2.6 In-Flight and New Connection Projects and Maintenance Work

28 At the time the AMP becomes effective, there will be a number of projects in-flight in the Connection Process at DFO substations. The timing of SAS agreement execution for these projects will be reviewed on a case-by-case basis to determine if it is more efficient to update the DFO substation SAS as part of the project, or following the process described in subsections 2.2 and 2.3 above.

29 Projects at DFO substations submitting SASRs after the AMP effective date will follow the process described in subsection 2.4 above.

30 The metering available at a DFO substation will be assessed as part of the scoping phase of new and in-flight projects in the Connection Process, prior to final investment decisions. It is not expected that any projects in-flight at the time the AMP becomes effective will be located at DFO substations that have Metering Infrastructure installed but no meters at the feeder level.

31 If, at the time the AMP becomes effective, substantial design work has not been completed for an in-flight connection project[7] that includes the installation, or replacement, of a switchgear lineup at a DFO substation, then Metering Infrastructure will be required. Prior to this, the installation of Metering Infrastructure is at the discretion of the TFO.

[7] This may be a capital maintenance project, a rebuild of a DFO substation, or a new DFO substation.