Web-Based Surface Metering Display (SMD)
User Manual

Airspace Technology Demonstration 2 (ATD-2)

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Abstract

This document serves as a user manual for the ATD-2 Web-Based Surface Metering Display (SMD) (version 5.11). It describes the elements of the SMD interface and provides step-by-step instructions for using the tool. The SMD can be used to select the type of metering, set specific metering parameters, and set excess queue time variables. Feedback can also be submitted through the site. The SMD is a component of the NASA Airspace Technology Demonstration 2 (ATD-2) sub-project.

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1 Getting Started

The thin green bar on the left side of the display provides access to several different system views (Figure 1.1). To get started, first make sure that "My Desktop" is displayed.

To access "My Desktop":

Step 1: Hover the mouse over the green bar on the left side of the display to view the menu (Figure 1.1).

Step 2: Select "My Desktop" from the menu (Figure 1.1).

Figure 1.1. Use the green bar to navigate to "My Desktop."

The NASA icon in the lower left of the display provides access to ATD-2 tools, including the Web-Based Surface Metering Display (SMD), which opens in a browser window (Figure 1.2).

To launch the Web-Based Surface Metering Display (SMD):

Note: Ensure that "My Desktop has been selected.

Step 1: Select the NASA icon in the lower left of the window to open the ATD-2 suite; menu options may vary (Figure 1.2).

Step 2: Select "SMD" from the menu.

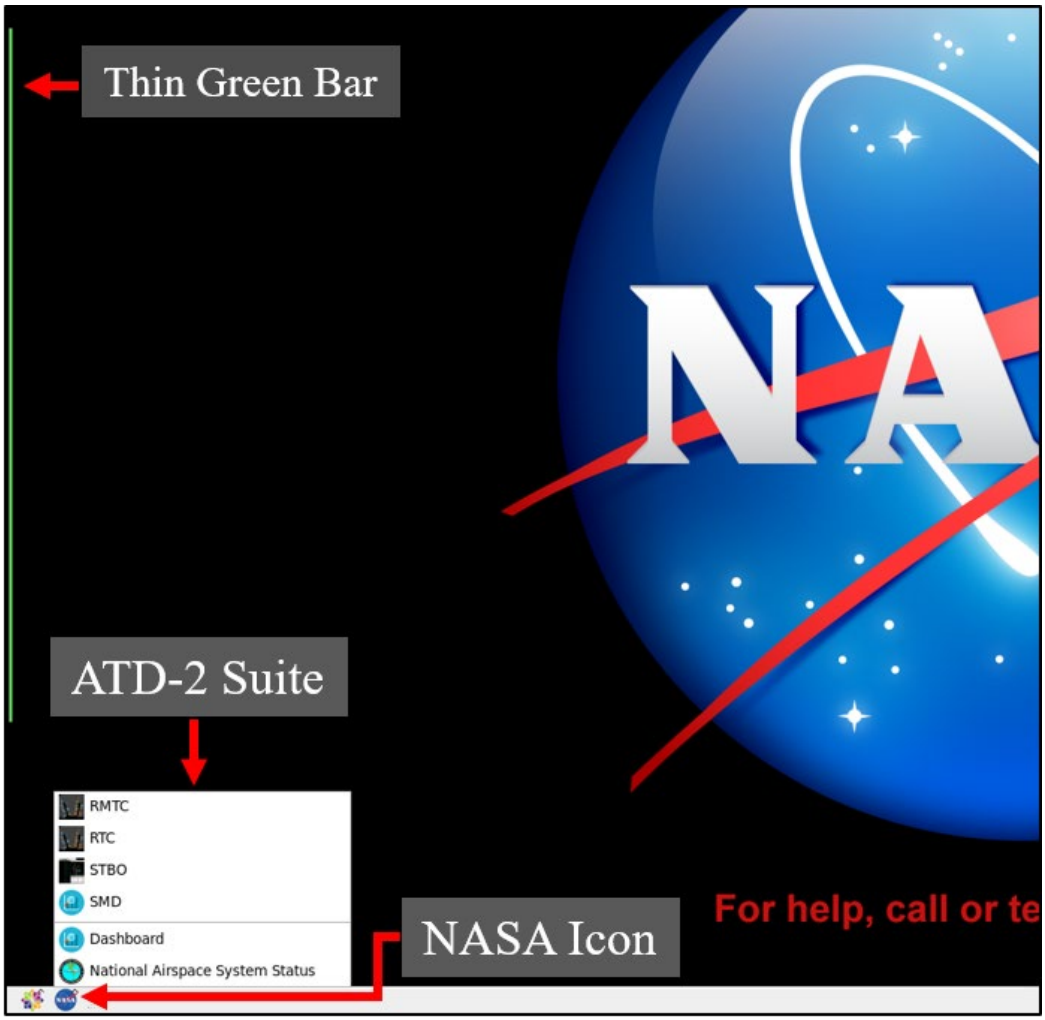


Figure 1.2. Select "SMD" from the ATD-2 Suite menu.

2 Surface Metering Display (SMD) Interface

This section describes the ATD-2 surface metering capability and the elements of the web-based SMD interface.

2.1 Overview

The SMD site is displayed in a browser window and consists of two pages:

- **Metering Parameters** (Figure 2.1) is described in Section 2.3, and
- **Excess Queue Time** (Figure 2.2) is described in Section 2.4.

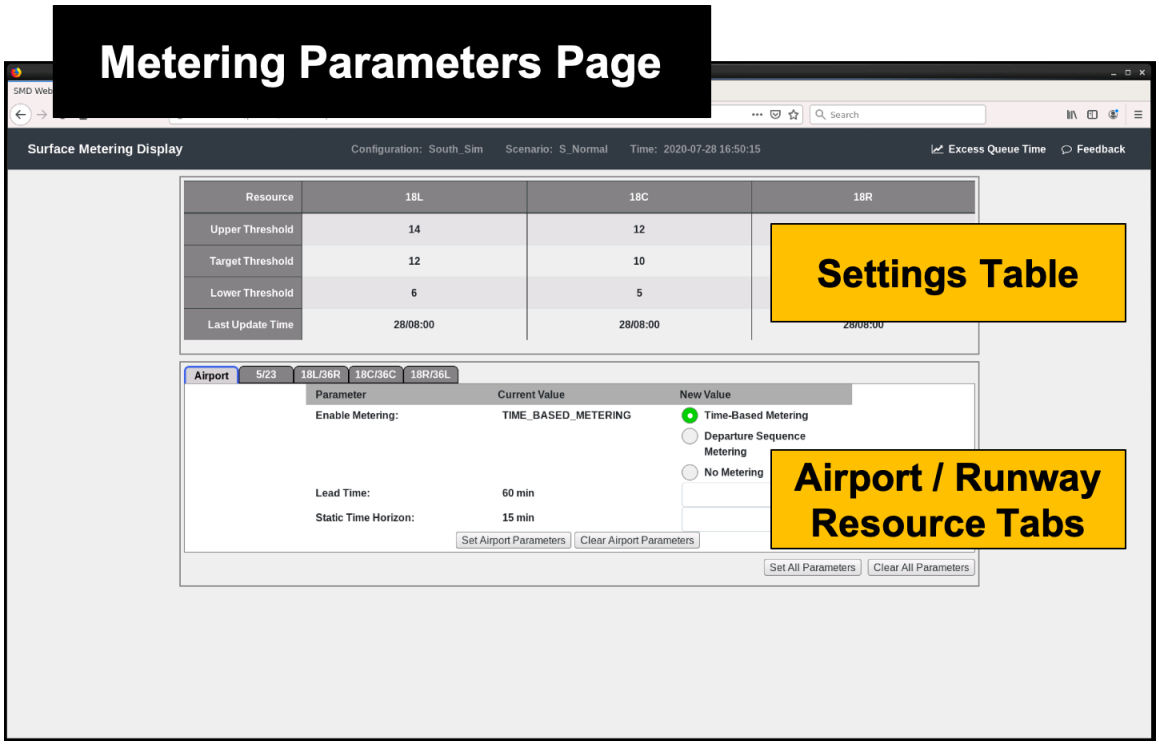


Figure 2.1. Surface Metering Display (SMD): Metering Parameters page.

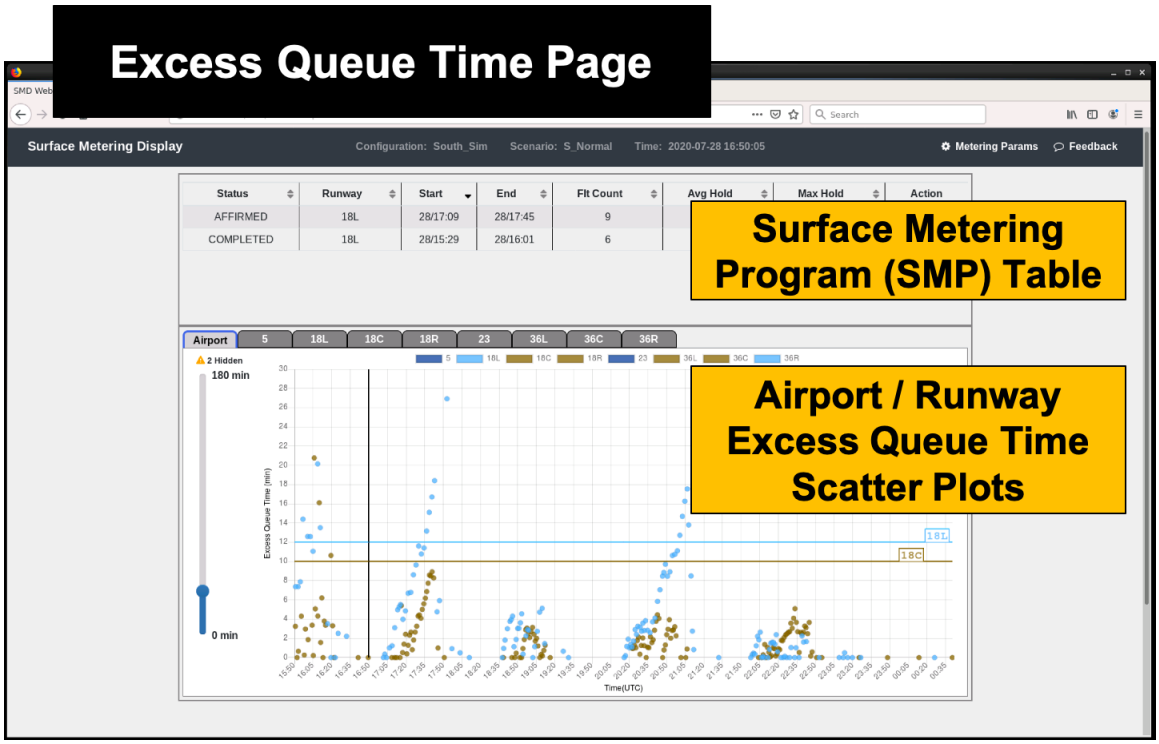


Figure 2.2. Surface Metering Display (SMD): Excess Queue Time page.

2.2 Toolbar

Both pages share a common Toolbar (Figure 2.3).

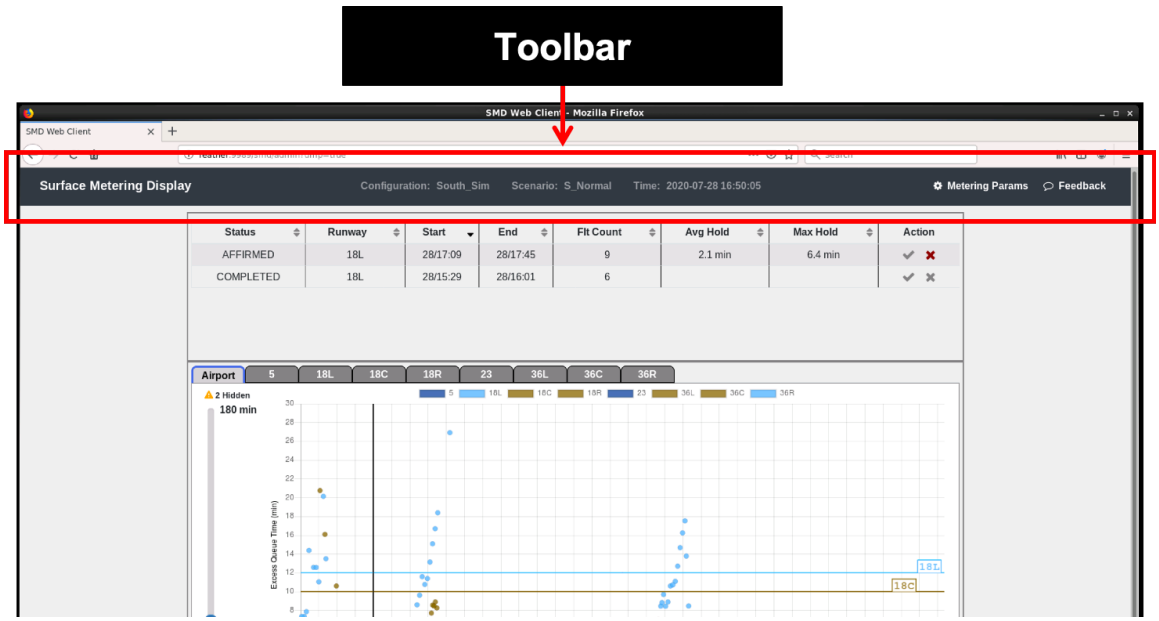


Figure 2.3. Surface Metering Display (SMD): Toolbar.

The Toolbar includes three status indicators (Figure 2.4), described in Table 1.

Table 1. Toolbar Status Indicators

Field	Description	Example
Configuration	The airport configuration currently in use.	"South_Sim"
Scenario	The current runway utilization.	"S_Normal"
Data/Time	Current date and time.	2020-07-28 16:50:05

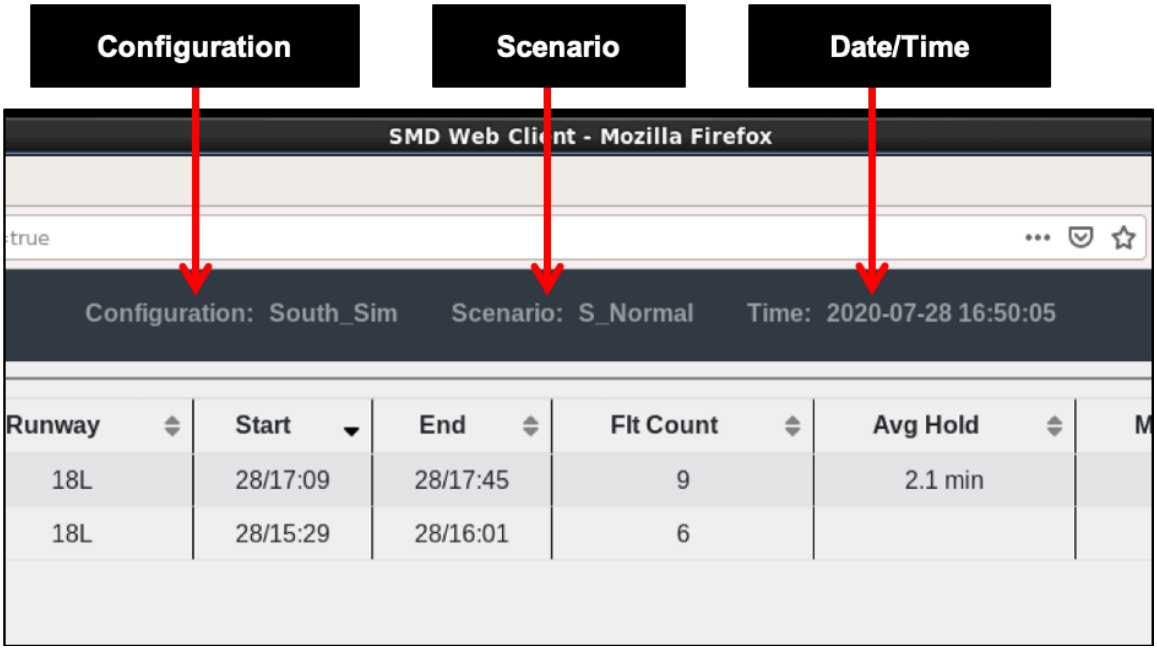


Figure 2.4. SMD Toolbar: Status indicators.

The Toolbar also includes two links (Figure 2.5), described in Table 2.

Table 2. Toolbar Links

Link	Description
Page Toggle	Use this link to toggle between the "Metering Parameters" page and the "Excess Queue Time" page.
Feedback	Use this link to access the User Feedback Form, described in Section 2.5.

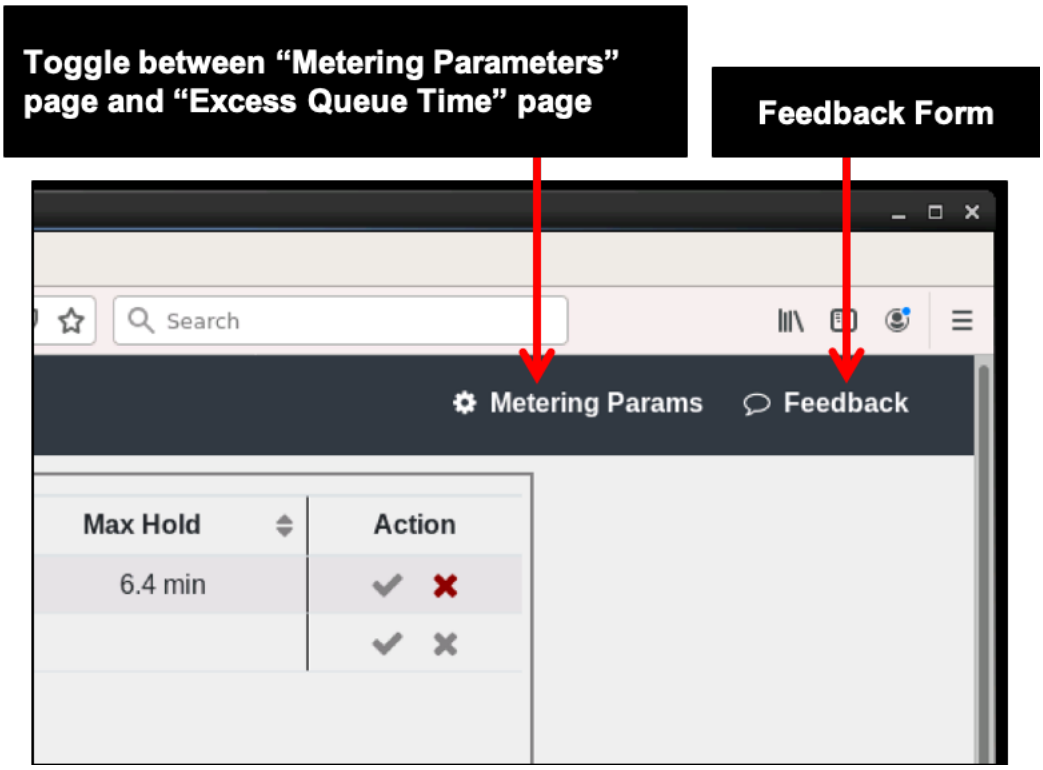


Figure 2.5. SMD Toolbar: Toggle and Feedback links.

2.3 Metering Parameters Page

Use the Metering Parameters page to select metering type and to set metering thresholds. The page consists of a Settings Table to view settings and Resource Tabs to make selections (Figure 2.6).

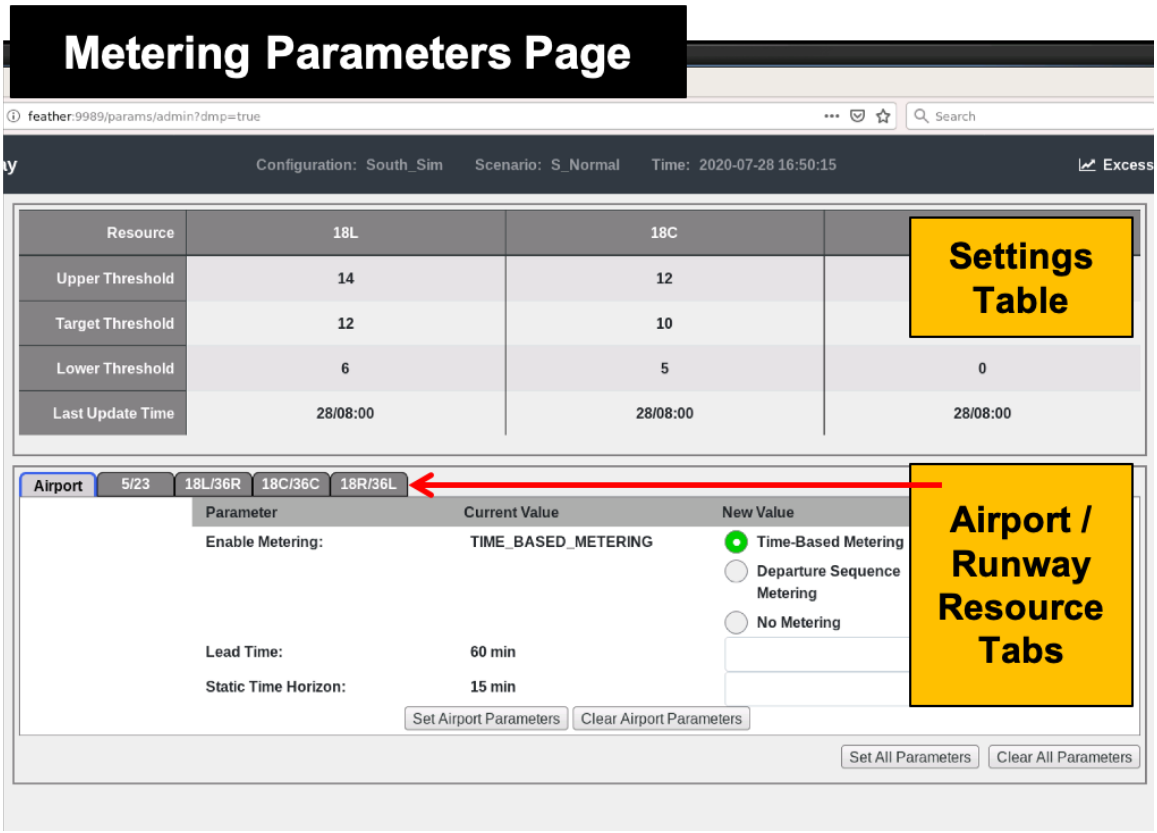


Figure 2.6. Surface Metering Display (SMD): Metering Parameters page.

2.3.1 Settings Table

Current threshold settings, in minutes, are displayed in the Settings Table on the top half of the Metering Parameters page (Figure 2.7). The settings for each "Resource," that is, each runway, are displayed according to the current airport configuration set in the STBO Client. Only active runways are included in the Settings Table. Excess Queue Time is defined as the amount of time a flight spends in the departure runway queue beyond unimpeded taxi time.

The "Upper," "Lower," and "Target Excess Queue Time" Threshold values are displayed for each runway (Figure 2.7).

- **Upper Threshold** represents the largest acceptable amount of Excess Queue Time, in minutes. This threshold is used to determine when to start surface metering.
- **Target Threshold/Target Excess Queue Time (TEQT)** represents the desired amount of Excess Queue Time, in minutes. This threshold is used to determine when to turn metering on and how much gate hold to assign to each flight.

- **Lower Threshold** represents the least acceptable amount of Excess Queue Time during surface metering, in minutes. This threshold is used to determine when to end surface metering.

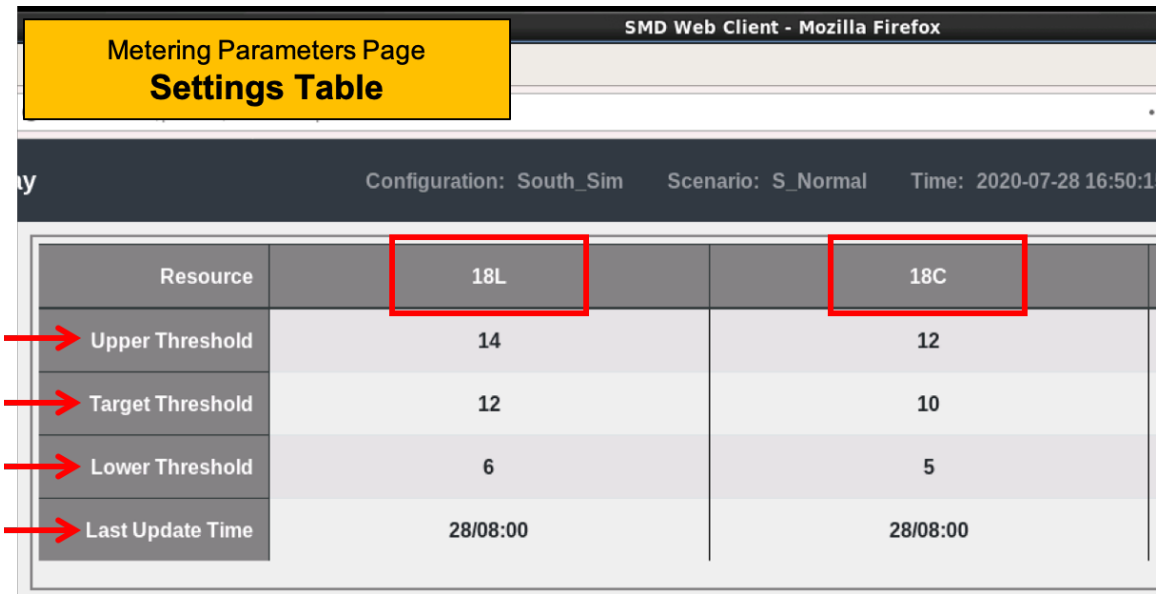


Figure 2.7. Metering Parameters page: Settings Table. In this example, metering parameters are displayed for Runways 18L and 18C.

"**Last Update Time**" refers to the time that the parameters in this table were last updated, with the date in the *dd/hh:mm* format (e.g., "28/08:00 in Figure 2.7).

2.3.2 Resource Tabs

On the bottom half of the Metering Parameters page, Resource Tabs allow changes to be made for the entire airport and/or for individual/paired runways. Each tab is organized with the following headings/columns:

- **Parameter:** Identifies the different parameters that can be configured.
  - **"Airport" tab** (Figure 2.8):
    - Enable Metering
    - Lead Time, and
    - Static Time Horizon (STH)
  - **Runway tabs (**Figure 2.9**):**
    - Upper Threshold
    - Target Excess Queue Time, and
    - Lower Threshold
- **Current Value:** Displays the current setting of each parameter.
- **New Value:** Lists the possible parameter options or values that can be altered.

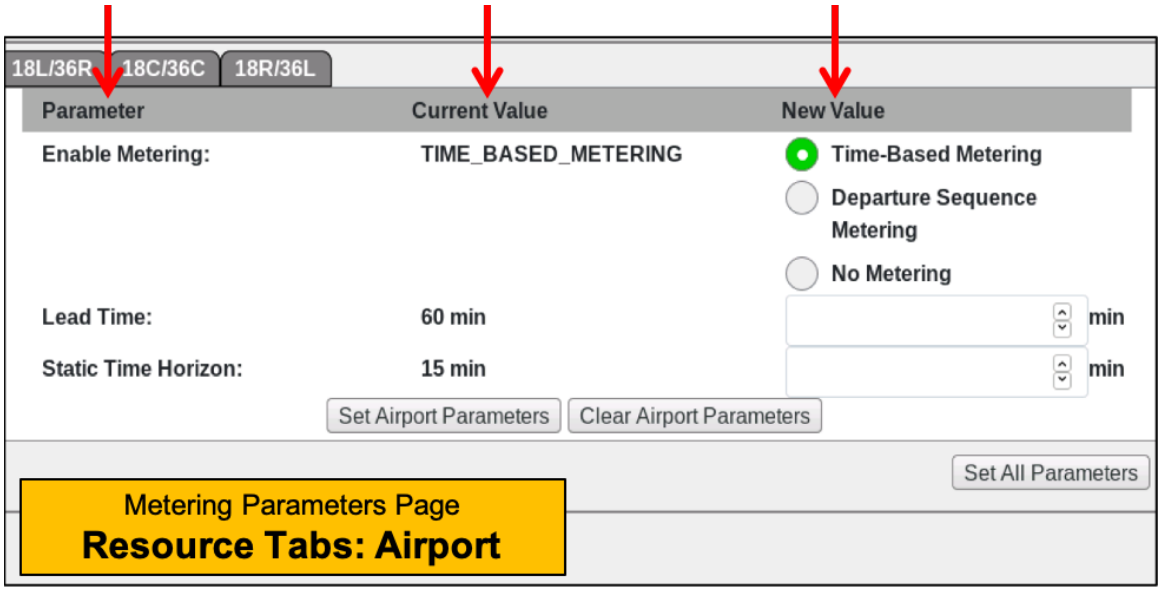


Figure 2.8. Metering Parameters page: *Airport* Resource Tab. In this example, metering type is *currently* set to "Time-Based Metering" with a Lead Time of 60 min and an STH of 15 min.

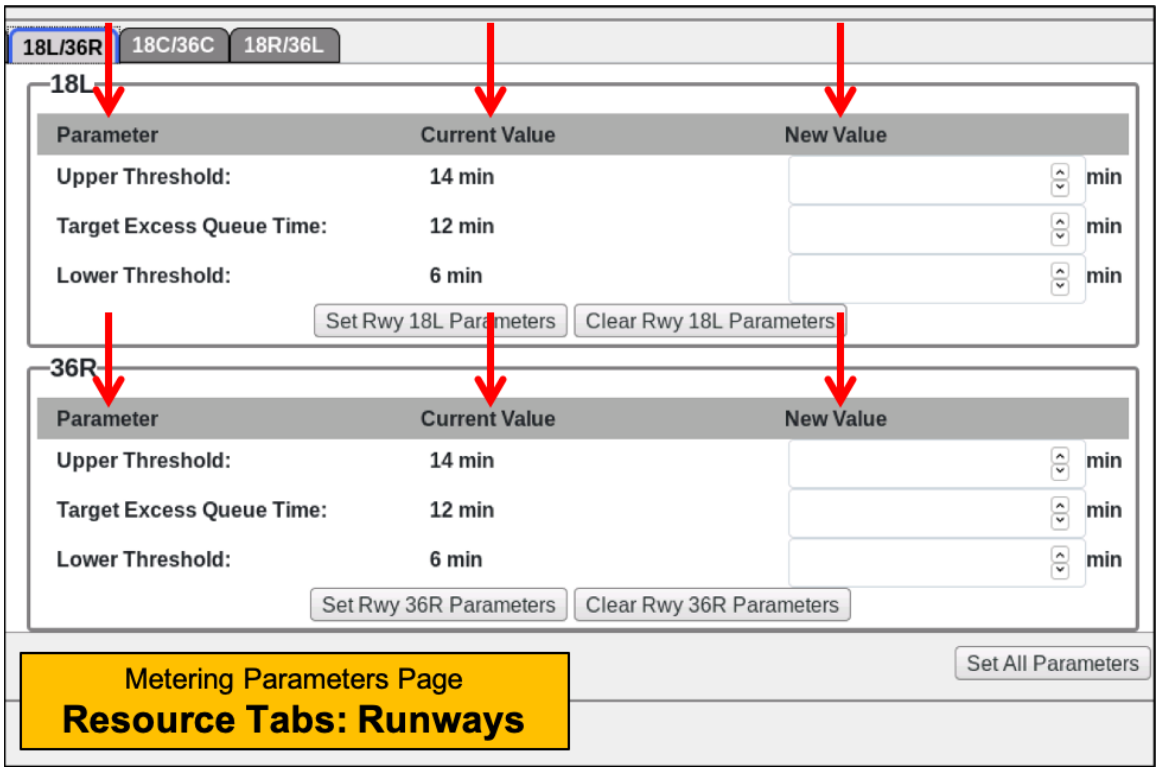


Figure 2.9. Metering Parameters page: *Runway* Resource Tab. In this example, Runways 18L and 36R are *currently* set to an Upper Threshold of 14 min, a Target Excess Queue Time of 12 min, and a Lower Threshold of 6 min.

This section describes the options and functionality available for each resource tab.

2.3.2.1 Airport Tab

The "**Airport**" tab provides options for the type of metering and associated parameters for the entire airport, including: enabling metering, setting lead times for Time-Based Metering, and setting a queue size for Departure Sequence Metering.

The default metering setting is "No Metering." Alternate options include "Time-Based Metering" (described in Section 2.3.2.1.1) and "Departure Sequence Metering" (described in Section 2.3.2.1.2).

2.3.2.1.1 Time-Based Metering

When operating in Time-Based Metering mode, the ATD-2 system predicts the need for metering and then assigns gate holds to meet metering criteria. The ATD-2 system proposes a new Surface Metering Program (SMP) for a specific runway when the following conditions are predicted to be met within the Lead Time window. The tactical conditions for turning metering on are:

1. The predicted excess queue time is above the Target Threshold for at least one flight off the gate, and
2. The predicted excess queue time is above the Upper Threshold for at least one departure predicted to push back within the next 10 minutes.

When "Time-Based Metering" is selected, "Lead Time" and "Static Time Horizon" are displayed as configurable parameters. The "Current Value" setting is shown, followed by up/down arrows under "New Value," for selecting different values for these parameters in integer minutes (Figure 2.10).

- **Lead Time** specifies how far into the future the system evaluates the need for an SMP. The default "Lead Time" is 60 min. The longer the lead time, the earlier the notice is of the need for metering.
- **Static Time Horizon (STH)** determines how far in advance the scheduler will automatically freeze a flight's Target Off-Block Time (TOBT). For example, if set to 15 min, the TOBT is frozen at TOBT minus 15 min. Using an STH may allow airlines to leverage a gate hold for additional benefit (e.g., letting a connecting passenger that previously would have barely missed the flight to catch the flight instead). But freezing TOBTs in advance also means the scheduler has less flexibility to make last minute changes to the metered schedule to handle very tactical situations. The STH is also applied to EDCT/APREQ flights while an SMP is active.

To enable Time-Based Metering:

Step 1: In the "New Value" column, select the "Time-Based Metering" radio button.

Note: The radio button turns green when selected and the "Airport" tab is highlighted in orange, indicating a pending change on the Airport tab (Figure 2.10).

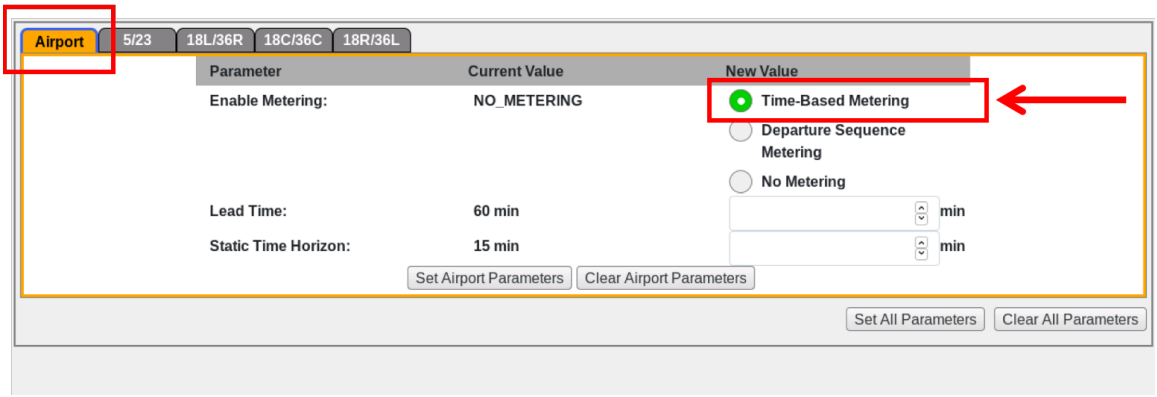


Figure 2.10. Change the metering type (in this example, Time-Based Metering is selected).

Step 2: In the "New Value" column, use the up and down arrows in the "Lead Time" field to enter a new value (in minutes) or click in the text box and manually type a new Lead Time value (e.g., 180 minutes in Figure 2.11).

Step 3: In the "New Value" column, use the up and down arrows in the "Static Time Horizon" field to enter a new STH value (in minutes) or click in the text box and manually type a new STH value (e.g., 12 minutes in Figure 2.11).

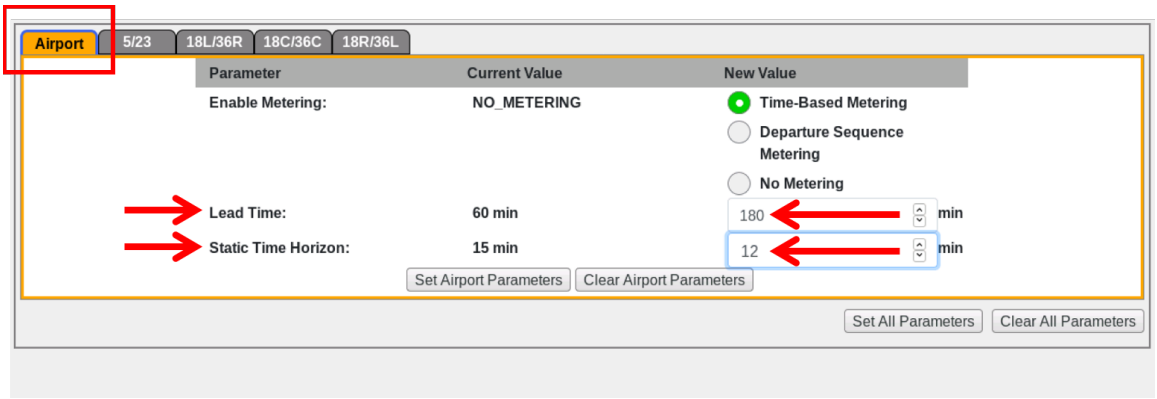


Figure 2.11. Select a new value in the Lead Time and Static Time Horizon fields.

Step 4: Click on the "Set Airport Parameters" button to accept the pending changes on the "Airport" tab (Figure 2.12).

Alternatively: Select "Clear Airport Parameters" to clear the pending changes on the "Airport" tab (Figure 2.12).

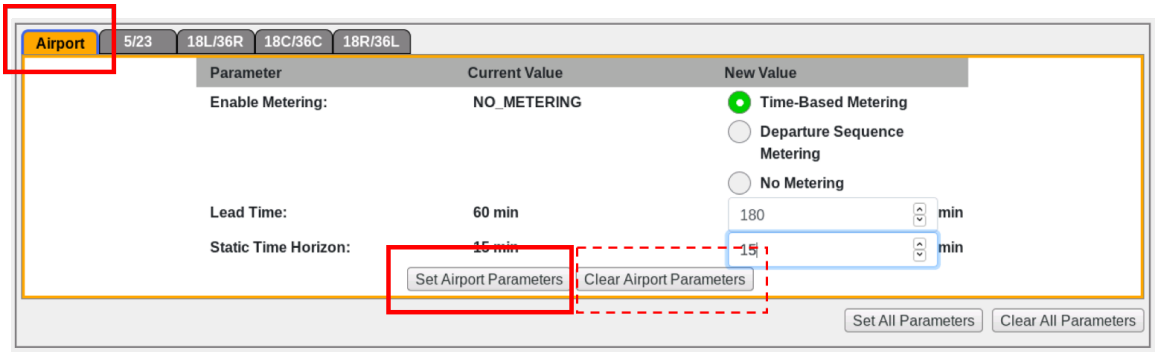


Figure 2.12. Select "Set Airport Parameters" to save pending changes on the Airport tab.

The ATD-2 system ends an active Surface Metering Program (SMP) either when a user manually rejects the SMP or when the following criteria are met:

1. The predicted Excess Queue Time for all departure flights off the gate is below the Lower Threshold, and
2. The predicted Excess Queue Time for all departure flights predicted to push back in the next 10 minutes is below the Lower Threshold.

2.3.2.1.2 Departure Sequence Metering

When operating in Departure Sequence Metering mode (no longer used at CLT but relevant for other airports), a value is selected for the target airport queue (total number of active departure flights on the airport surface that are in any state between pushing back from the parking gate to before takeoff). This value is displayed on the STBO Client and RTC/RMTC interfaces.

When "Departure Sequence Metering" is selected, "Target Queue" is a configurable parameter (see Figure 2.13).

To enable Departure Sequence Metering:

Step 1: In the "New Value" column, select the "Departure Sequence Metering" radio button.

Note: The radio button will turn green when selected and the "Airport" tab will be highlighted in orange, indicating a pending change on the Airport tab (Figure 2.13).

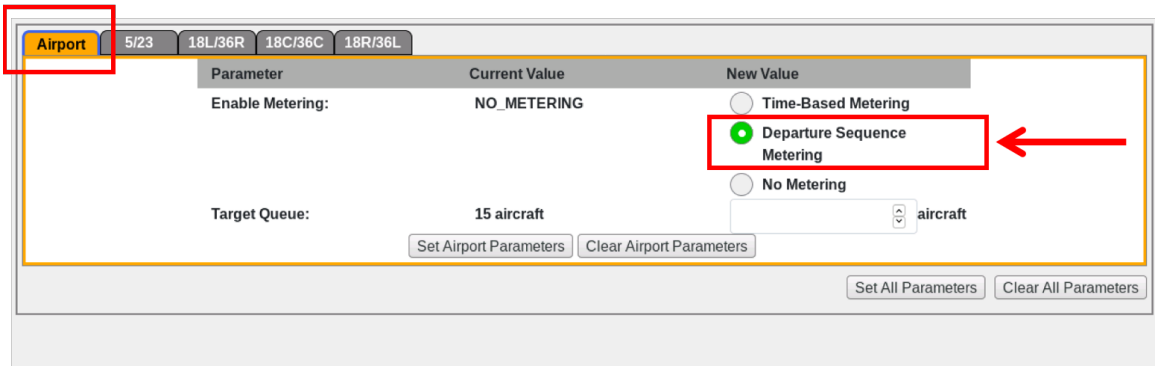


Figure 2.13. Change the metering type (in this example, Departure Sequence Metering is selected).

Step 2: In the "New Value" column, use the up and down arrows in the Target Queue field to enter a new value (number of aircraft) or click in the text box and manually type a new Target Queue value (e.g., 12 aircraft in Figure 2.14).

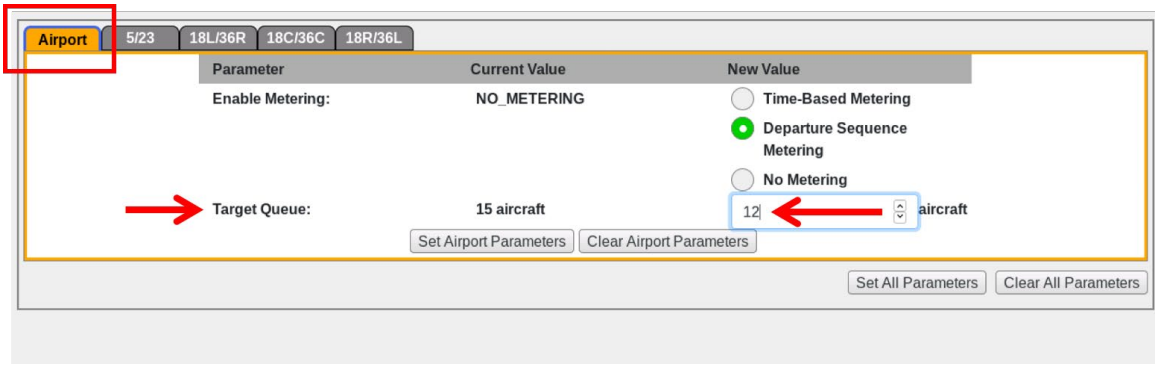


Figure 2.14. Select a new value in the Target Queue field.

Step 3: Click on the "Set Airport Parameters" button to accept the pending changes on the "Airport" tab (Figure 2.15).

Alternatively: Select "Clear Airport Parameters" to clear the pending changes on the "Airport" tab (Figure 2.15).

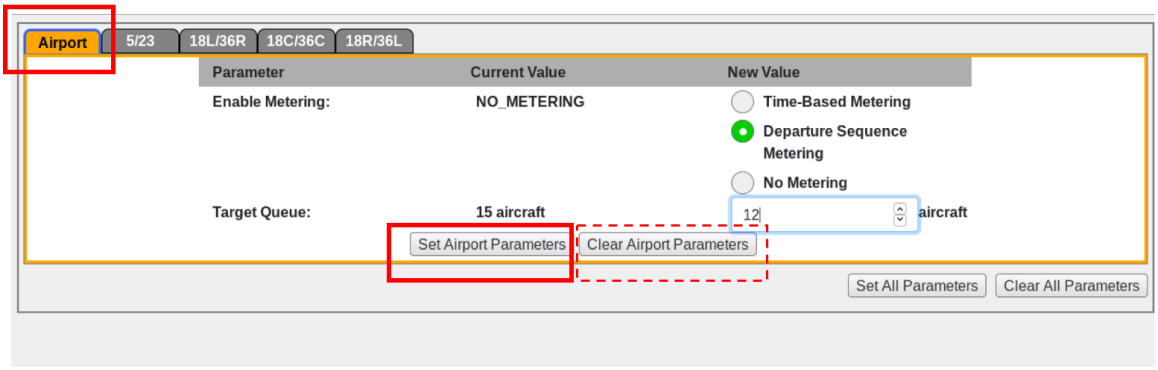


Figure 2.15. Select "Set Airport Parameters" to save pending changes on the Airport tab.

2.3.2.1.3 No Metering

When "No Metering" is selected for the airport, it removes all gate holds due to surface metering, ends any existing SMPs, and stops the recommendation of new SMPs.

To select No Metering:

Step 1: In the "New Value" column, select the "No Metering" radio button.

Note: The radio button will turn grey when selected and the "Airport" tab will be highlighted in orange, indicating a pending change on the Airport tab (Figure 2.16).

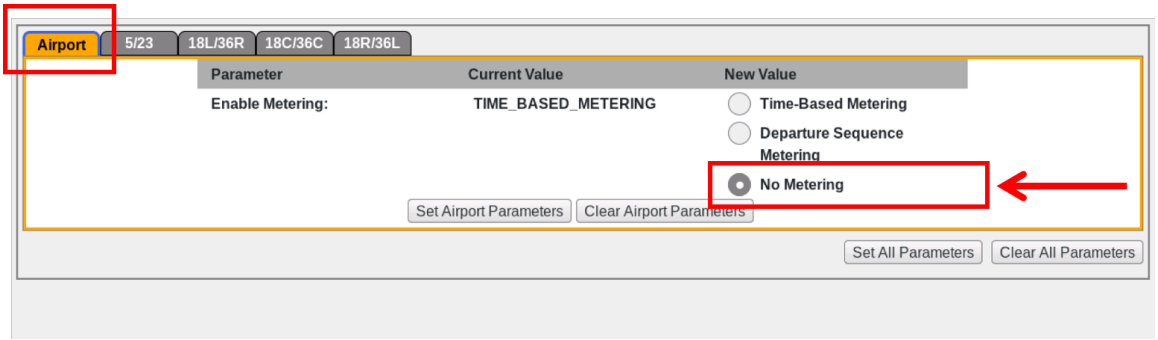


Figure 2.16. Select "No Metering" to turn off metering for the airport.

Step 2: Click on the "Set Airport Parameters" button to accept the pending changes on the "Airport" tab (Figure 2.17).

Alternatively: Select "Clear Airport Parameters" to clear the pending changes on the "Airport" tab (Figure 2.17).

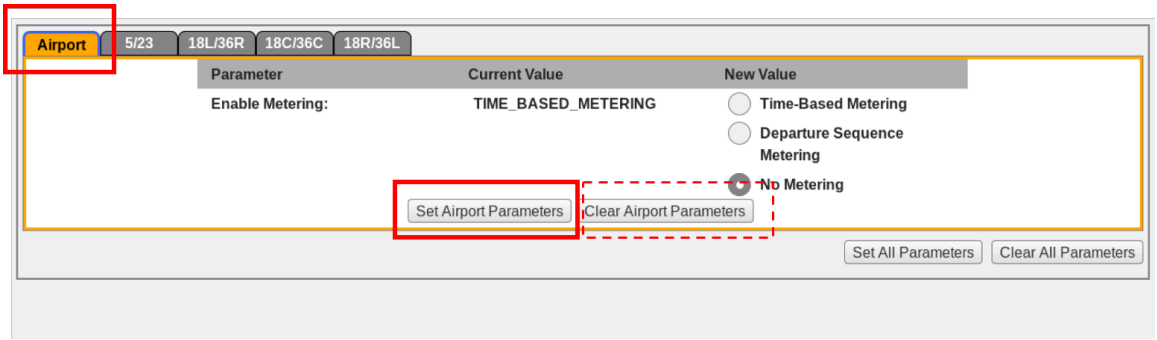


Figure 2.17. Select "Set Airport Parameters" to save pending changes on the Airport tab.

2.3.2.2 Runway Tabs

The "Runway" tabs provide options for setting the "Upper Threshold," the "Target Excess Queue Time," and the "Lower Threshold" for each individual runway (e.g., 5, 23, 18L, 36R). For each parameter, the "Current Value" setting is shown, followed by up/down arrows under "New Value" for selecting a different value (Figure 2.18).

- **Upper Threshold** represents the largest acceptable amount of Excess Queue Time, in minutes. This threshold is used to determine when to start surface metering.
- **Target Threshold/Target Excess Queue Time (TEQT)** represents the desired amount of Excess Queue Time, in minutes. This threshold is used to determine when to turn metering on and how much gate hold to assign to each flight.
- **Lower Threshold** represents the least acceptable amount of Excess Queue Time during surface metering, in minutes. This threshold is used to determine when to end surface metering.

2.3.2.2.1 Target Excess Queue Time and Threshold Values

Use the Runway tabs to set metering parameters for each runway.

To set the target and threshold values for an individual runway:

Step 1: In the "New Value" column, use the up and down arrows in the following fields to enter new values (in minutes) or click in each text box and manually type a new value:

- Upper Threshold field (e.g., 16 min in Figure 2.18).
- Target Excess Queue Time (TEQT) field (Figure 2.18), and
- Lower Threshold field (Figure 2.18).

Note: The "Runway" tab (e.g., 18L/36R) will be highlighted in orange, indicating a pending change on the Runway tab (Figure 2.18).

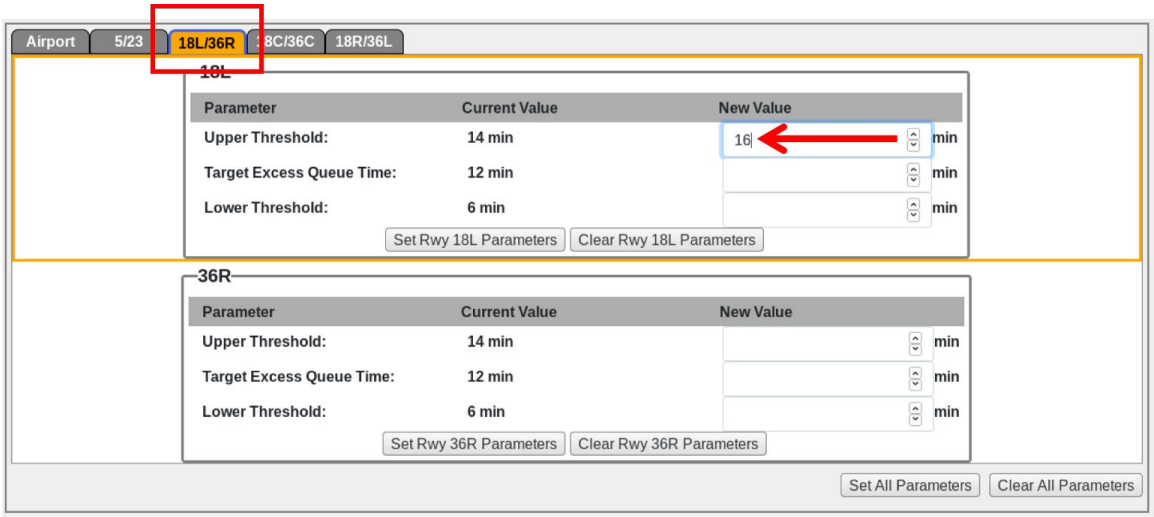


Figure 2.18. Set Upper and Lower Thresholds and Target Excess Queue Time (TEQT) values for each runway (in this example, Runway 18L).

Step 2: Click on the "Set Rwy 18L Parameters" button to accept the pending changes for this runway (Figure 2.19).

Alternatively: Select "Clear Rwy 18L Parameters" to clear the pending changes for this runway (Figure 2.19).

Note: Updated target and threshold values are displayed in the Settings Table (Figure 2.20).

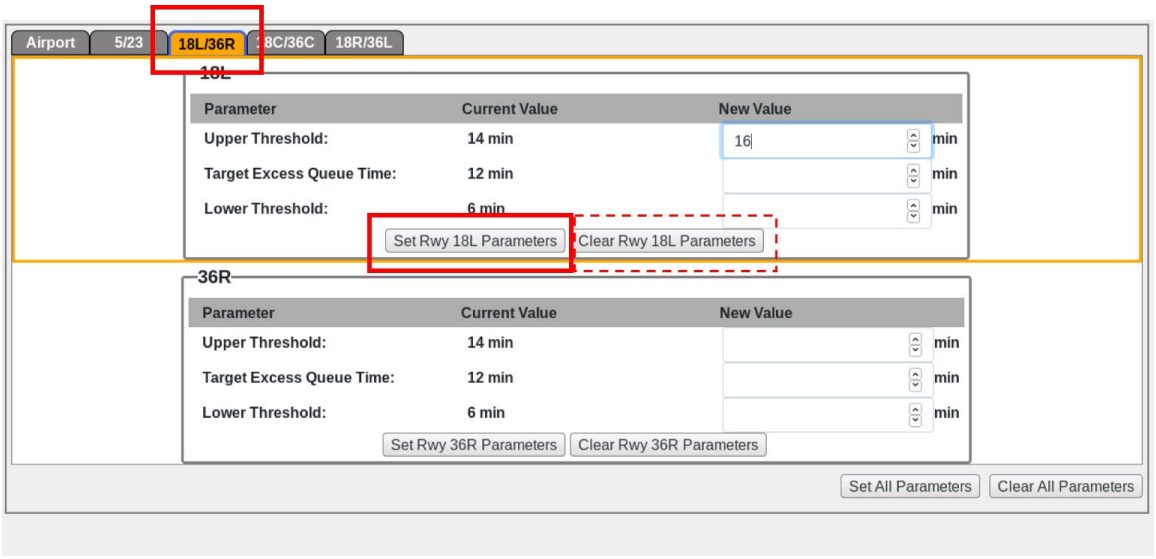


Figure 2.19. Select "Set Rwy 18L Parameters" to save pending changes for this runway.

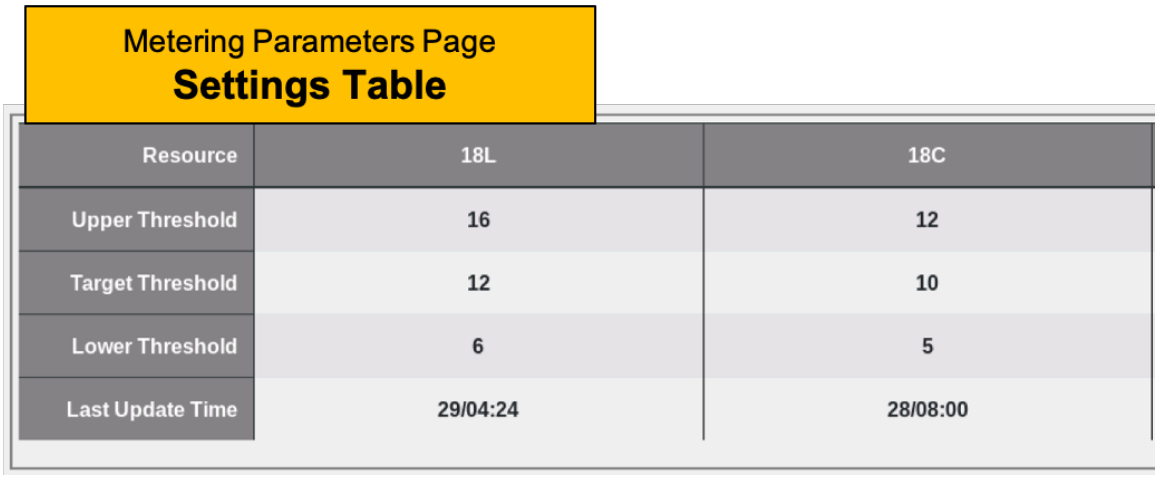


Figure 2.20. Metering Parameters page: Updated Settings Table.

To save changes across multiple tabs:

Step 1: When there are pending changes on more than one tab, select the "Set All Parameters" button in the lower right corner of the page to save <u>all</u> pending changes at once (Figure 2.21).

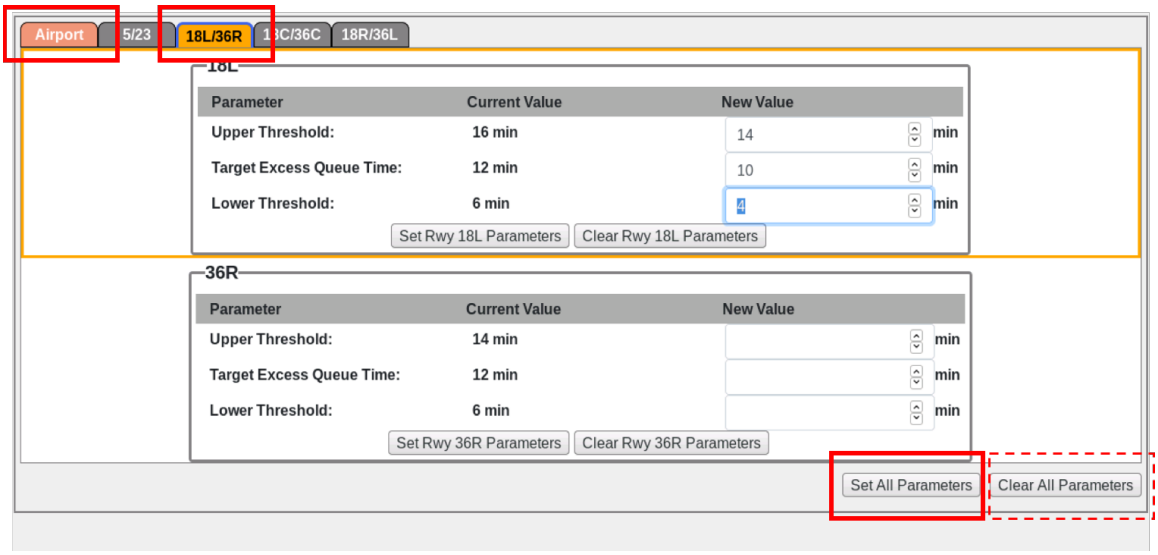


Figure 2.21. Use the "Set All Parameters" to save pending changes on all tabs.

2.4 Excess Queue Time Page

The current status of each Surface Metering Program (SMP) and Excess Queue Time scatterplots for the airport/individual runways are available on the Excess Queue Time page (Figure 2.22).

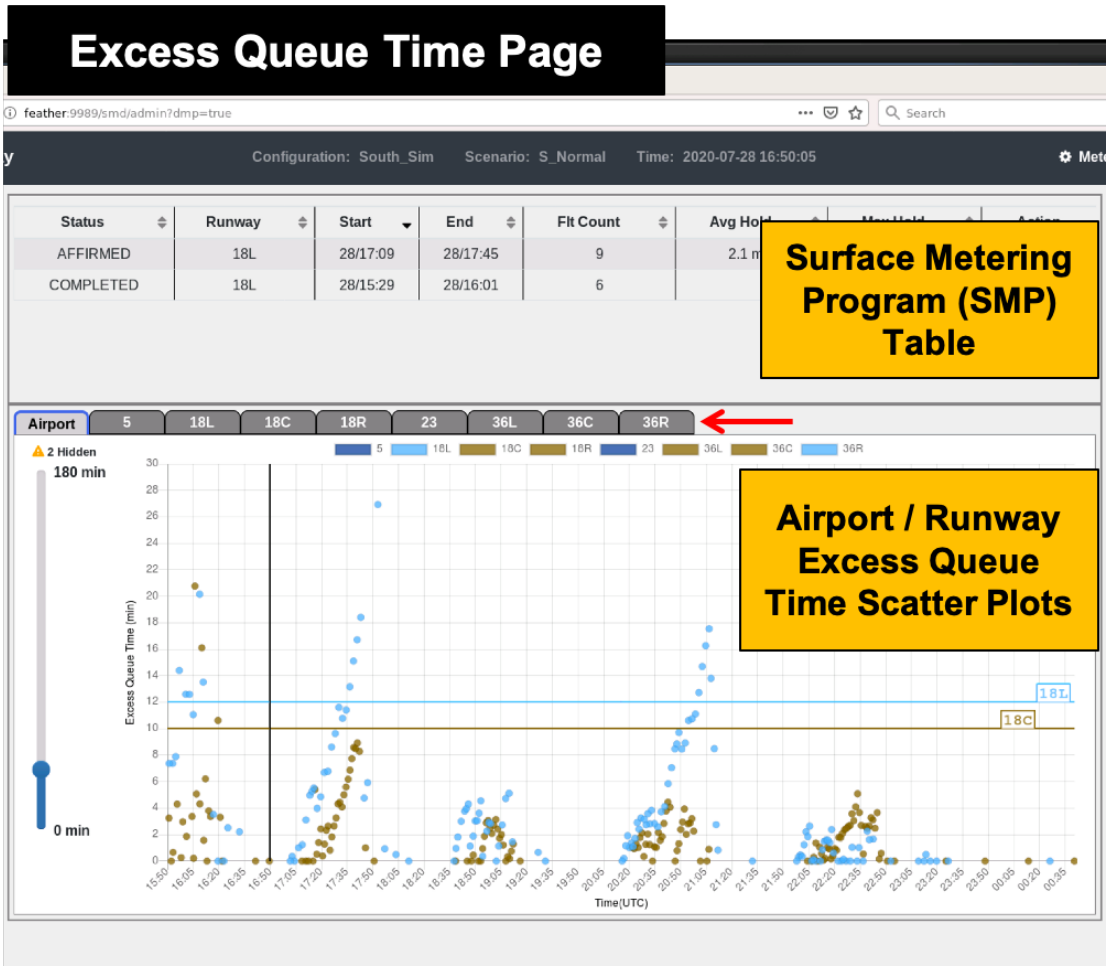


Figure 2.22. Surface Metering Display (SMD): Excess Queue Time page.

2.4.1 SMP Table

The SMP table is displayed at the top of the Excess Queue Time page. Each row in the table represents a different SMP (e.g., two SMPs are visible in Figure 2.23).

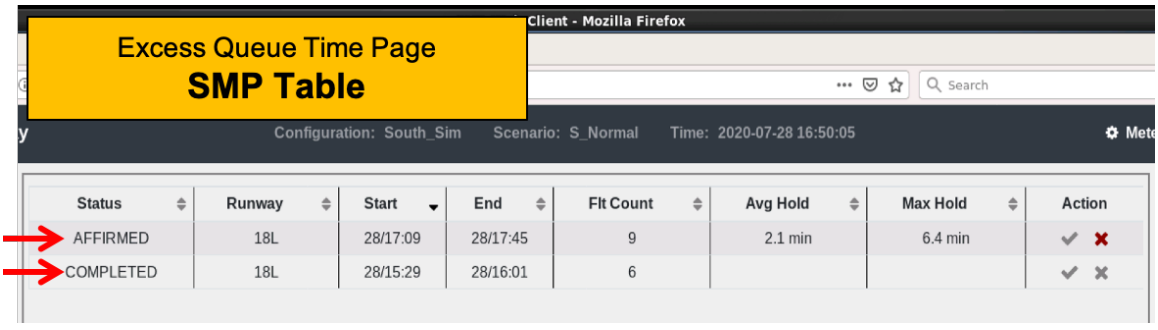


Figure 2.23. Excess Queue Time page: Surface Metering Program (SMP) Table.

Columns displayed in the SMP table are described in Table 3.

Table 3. Columns in the Surface Metering Program (SMP) Table

Column	Description
Status	Current metering status for the defined SMP.
Runway	The resource (runway) being metered.
Start	The specified start time of the SMP in *dd/hh:mm* format.
End	The specified end time of the SMP in *dd/hh:mm* format.
Fit Count	The number of flights affected by metering.
Avg Hold	Average hold time expected for all flights that are a part of the SMP, in minutes.
Max Hold	The maximum hold expected for flights that are a part of the SMP, in minutes.
Action	Either a checkmark or an "X." Actions will be discussed further in Section 2.4.1.2.1 and Section 2.4.1.2.2.

2.4.1.1 SMP Status

The possibilities for metering program status are described in Table 4 with examples shown in Figure 2.24.

Table 4. Possible states for SMP, shown in the Status column

SMP Status	Definition
Proposed	The ATD-2 system is recommending that metering be used between the start and end time of the SMP, but no action has been taken on the SMP.
Affirmed	The recommended SMP has been accepted (manually or automatically).
Rejected	The recommended SMP was *not* accepted.
Obsolete	The ATD-2 system is no longer recommending metering. A Proposed, Affirmed, or Rejected SMP can transition into this state.
Active	An affirmed SMP has started and the Ramp Traffic Console (RTC) is now showing metering advisories for that runway.
Completed	An active SMP is now finished.

In strategic metering, all of the states are possible. SMPs are created in response to identified needs and actions are enabled. States in the Status column are updated to reflect changes in metering status.

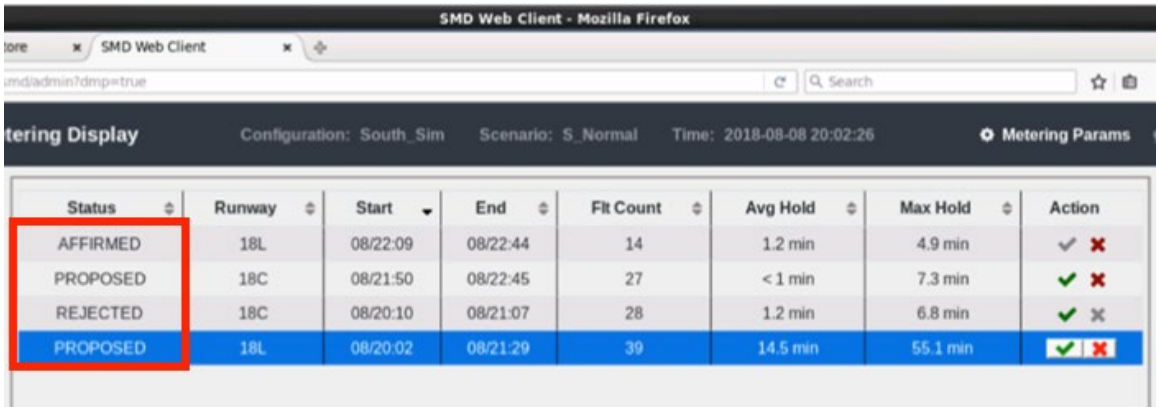


Figure 2.24. SMP table shows SMPs in various states.

The state of the SMP affects the start and end times reported, as follows:

- **Proposed**, **Affirmed**, or **Rejected SMP:** The Scheduler continually updates the predicted SMP start and end time, based on the latest data.
- **Active SMP:** Only the end time is updated.
- **Completed SMP:** Actual start and end time are known and do not change. The flight count and hold statistics reflect the actual values for the SMP.
- **Obsolete SMP:** The start and end time are the last start and end time prior to the SMP becoming obsolete.

An “Obsolete” SMP will be removed once the end time expires, but SMPs can become “Obsolete” even when their scheduled timeframe is still in the future. A “Completed” SMP will be removed an hour after the end time.

When an SMP is selected in the table, the scatterplot changes from the “Airport” tab to a runway tab. For example, in Figure 2.25, the selected SMP applies to Runway 36C. When the SMP is selected in the table, the “36C” tab is displayed.

The shaded range on the scatterplot indicates the predicted/actual time range for the SMP. Depending on which runway the SMP applies to, the time window is shaded brown for a westbound runway or blue for an eastbound runway. For example, in Figure 2.25, the time window is shaded brown because the SMP applies to the *westbound* runway (36C).

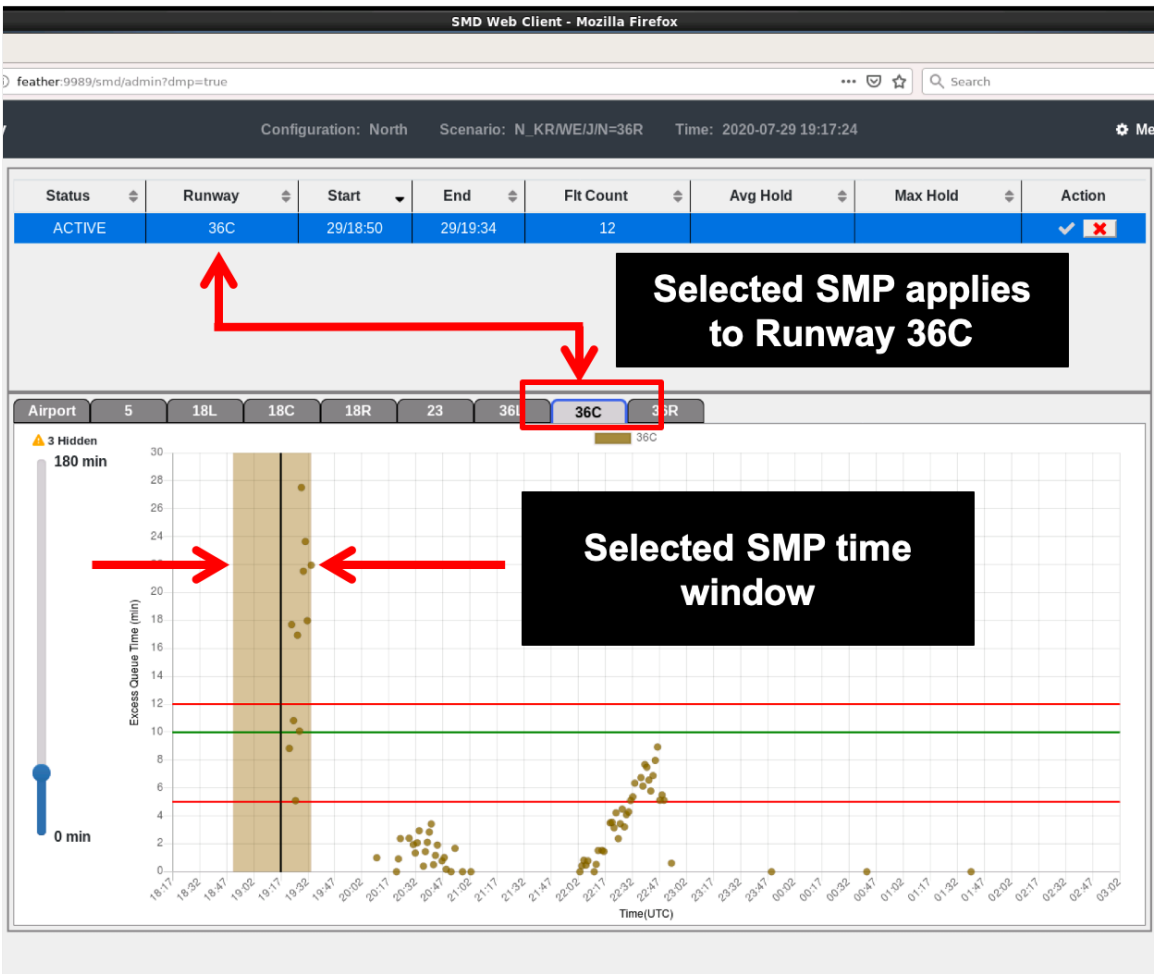


Figure 2.25. When an SMP is selected in the table, the runway tab for that SMP is displayed (in this example, 36C). The SMP time window is highlighted on the scatterplot and color-coded for the runway (in this example, brown, because Runway 36C is a *westbound* runway).

2.4.1.2 Act on an SMP

When the checkmark and/or "X" in the "Action" column are selectable, users can act upon an SMP. A selectable checkmark is shown in green; a selectable "X" is shown in red (Figure 2.26).

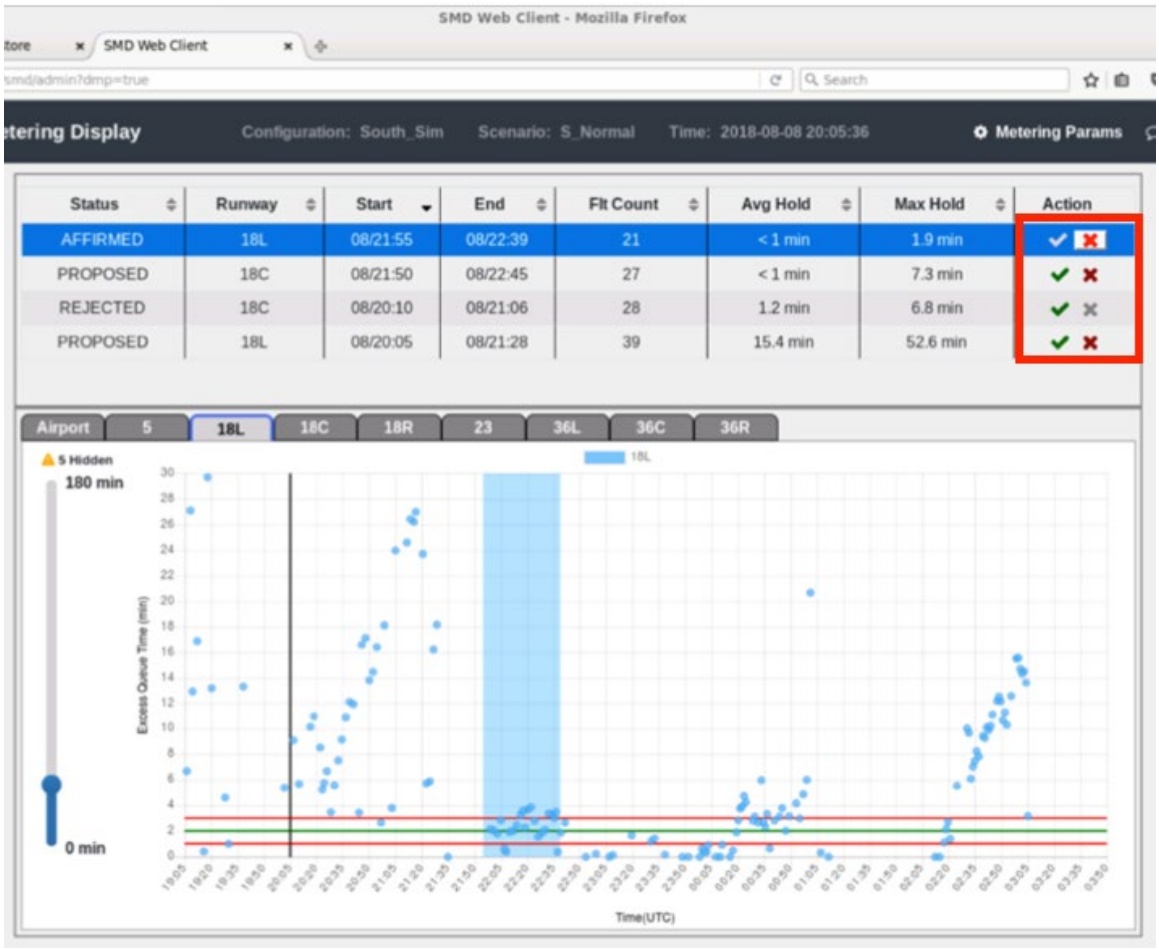


Figure 2.26. Action items are selectable if shown in red or green in the SMP table.

The checkmark and "X" are selectable when the SMP is in a state for which that button is active:

- Select the **Checkmark** to affirm the selected SMP, if the current state is "Proposed" or "Rejected."
- Select the "**X**" to reject the selected SMP, if the current state is "Proposed," "Affirmed," or "Active."

The checkmark and "X" in the "Action" column are grayed-out and no longer selectable once an SMP is "Completed" or "Obsolete" (example shown in Figure 2.27).

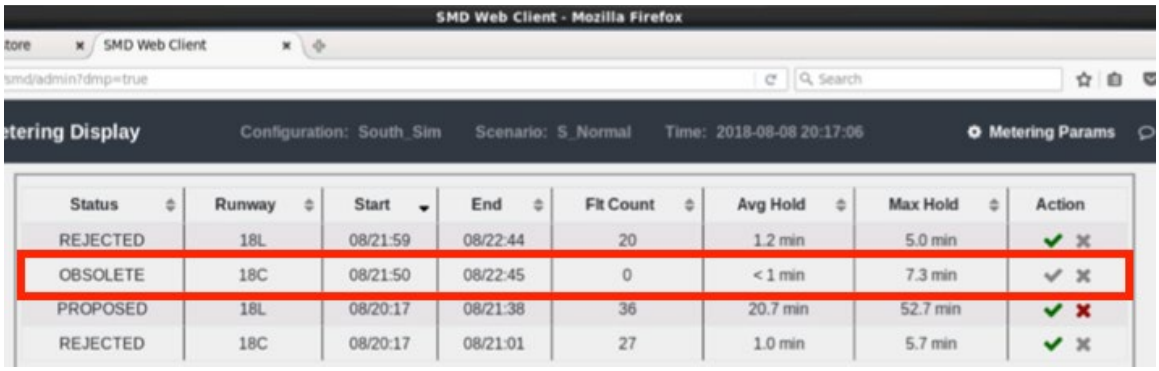


Figure 2.27. An Obsolete SMP has no selectable actions (i.e., the checkmark and "X" are grayed-out).

2.4.1.2.1 Affirm

To manually Affirm an SMP:

Note: This applies only to an SMP in the "Proposed" or "Rejected" state.

Step 1: Click on an SMP row in the SMP table to highlight that row and the corresponding SMP time window on the scatterplot.

Note: Once a row is highlighted, the "Action" column displays a selectable green checkmark if the current status is "Proposed" or "Rejected." For any other status, the checkmark will not be selectable.

Step 2: Click on the green checkmark to affirm the SMP (Figure 2.28).

Note: A message, highlighted in green, is shown at the bottom of the window to confirm that the SMP was accepted (Figure 2.28).

Note: The status in the SMP table changes to "Affirmed."

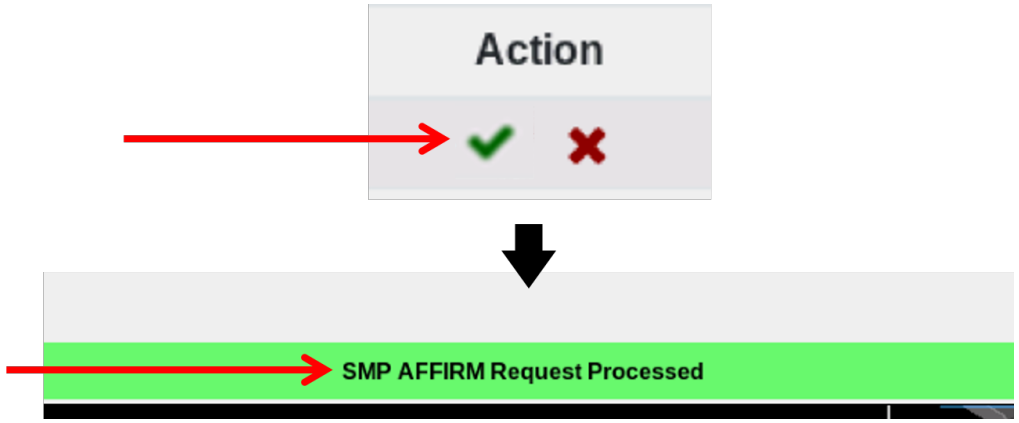


Figure 2.28. When the green checkmark in the Action column is selected, an "SMP Affirm" message is displayed, highlighted in green.

2.4.1.2.2 Reject

Once an SMP is rejected, no surface metering will happen for that runway during that timeframe. Any current Scheduler-recommended gate holds will be removed.

To manually Reject an SMP:

Note: This applies only to an SMP in the "Proposed," "Affirmed," or "Active" state.

Step 1: Click on an SMP row in the SMP table to highlight that row and the corresponding SMP time window on the data plot.

Note: Once a row is highlighted, the "Action" column will display a selectable red "X" if the current status is "Proposed," "Affirmed," or "Active." For any other status, the "X" will not be selectable.

Step 2: Click on the red "X" to reject the SMP (Figure 2.29).

Note: A message, highlighted in green, is shown at the bottom of the window to confirm that the SMP was rejected (Figure 2.29).

Note: The status in the SMP table changes to "Rejected."

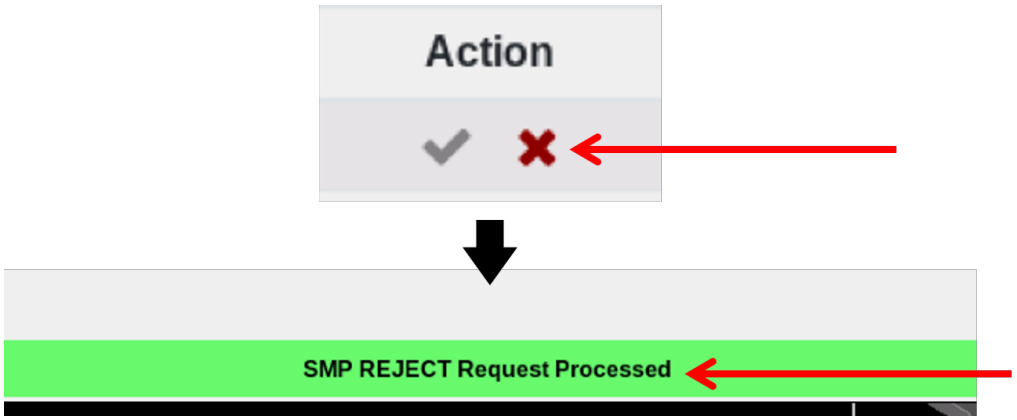


Figure 2.29. When the red "X" in the Action column is selected, an "SMP Reject" message is displayed, highlighted in green.

2.4.1.2.3 Auto-Affirm

SMPs may be *automatically affirmed* depending the software configuration. If an SMP is auto-affirmed, it can be rejected by clicking on the red "X" (Figure 2.30). The checkmark is grayed-out and not selectable.

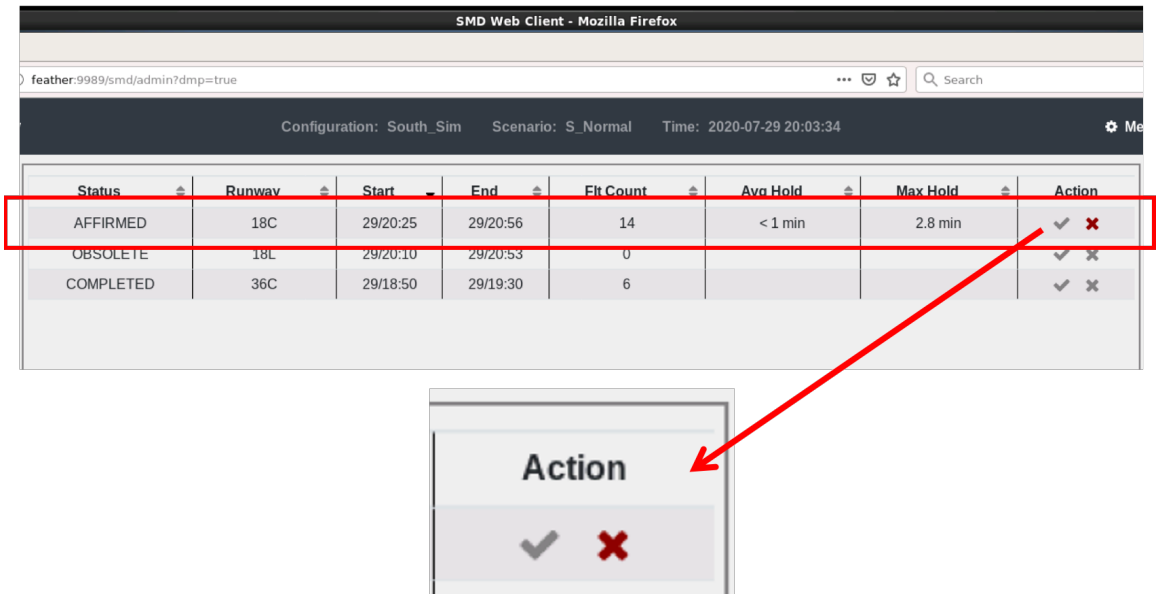


Figure 2.30. In auto-affirm mode, only the "X" can be selected to reject the SMP. The checkmark is grayed-out and not selectable.

2.4.2 Resource Tabs

Scatterplots for the airport and individual runways are displayed on the lower half of the Excess Queue Time page. This section describes the options and functionality available for each resource tab.

2.4.2.1 Airport Tab

The "**Airport**" tab displays scatterplot data for the entire airport. Each data point is plotted along the x-axis at either the actual or predicted takeoff time (UTC) of the flight. The height (y-axis) of the data point represents either the actual or predicted **Excess Queue Time** (i.e., the actual or predicted amount of time taxiing *beyond* unimpeded taxi time). Each departure flight is represented by a data point, which is color-coded for runway (eastbound is shown in blue, westbound is shown in brown). These plots consist of flights that are not constrained by an EDCT, APREQ, fix closure, or ground stop.

The vertical line in the Airport scatterplot represents Current Time (Figure 2.31):

- All data points to the **left** of Current Time represent *actual* Excess Queue Time (y-axis) for departure flights that have departed. These points are shown at the flight's *actual* takeoff time (x-axis).
- All data points to the **right** of Current Time represent *predicted* Excess Queue Time (y-axis) for flights that have not yet departed. These points are shown at the flight's *predicted* takeoff time (x-axis).

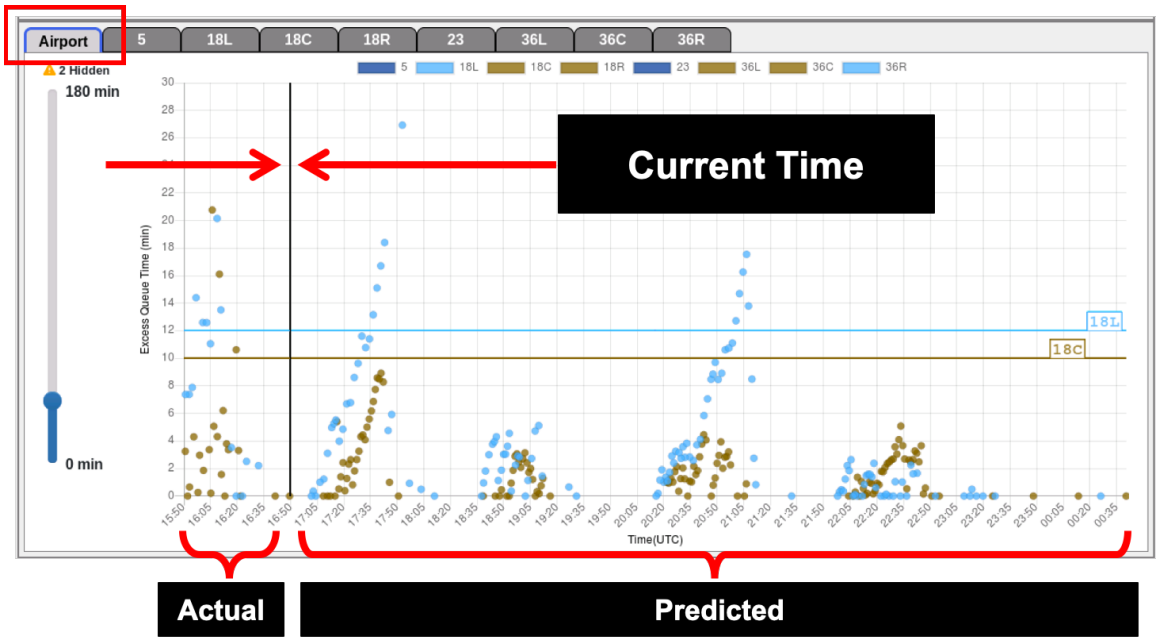


Figure 2.31. Excess Queue Time scatterplot (Airport tab): Vertical line represents current time.

The blue and brown horizontal lines in the Airport scatterplot indicate the Target Threshold for each active runway, color-coded by runway, as seen in Figure 2.32.

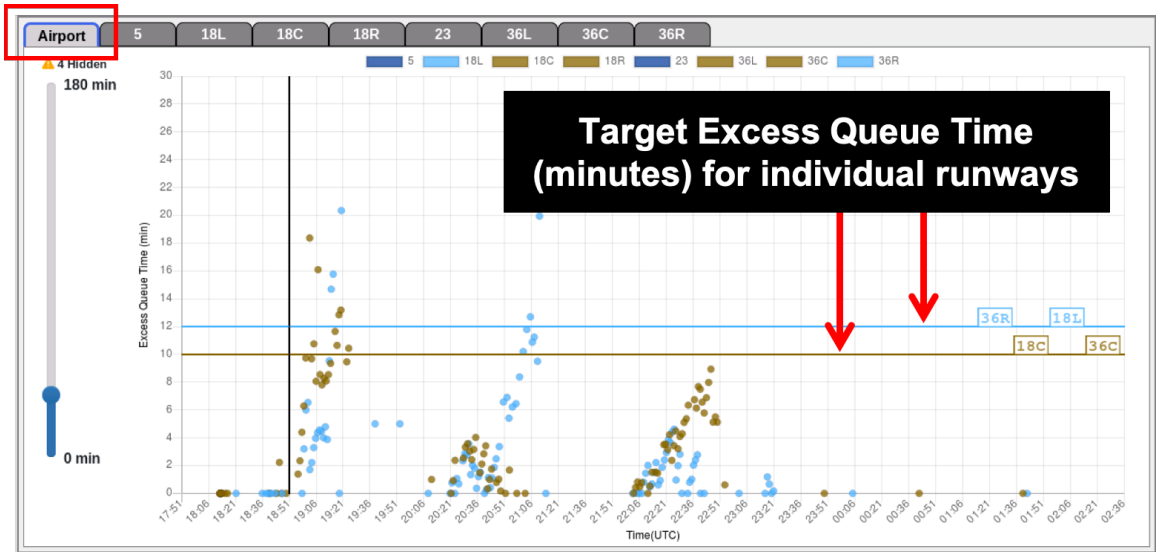


Figure 2.32. Airport tab: Target Excess Queue Time (TEQT) for the eastbound (blue) and westbound (brown) runways.

Hovering over a data point reveals a data tag with information about that particular flight.

To see specific flight information for a data point on the Airport tab:

Step 1: Hover over a data point on the scatterplot.

Note: A data tag is temporarily displayed with information about that flight (Figure 2.33).

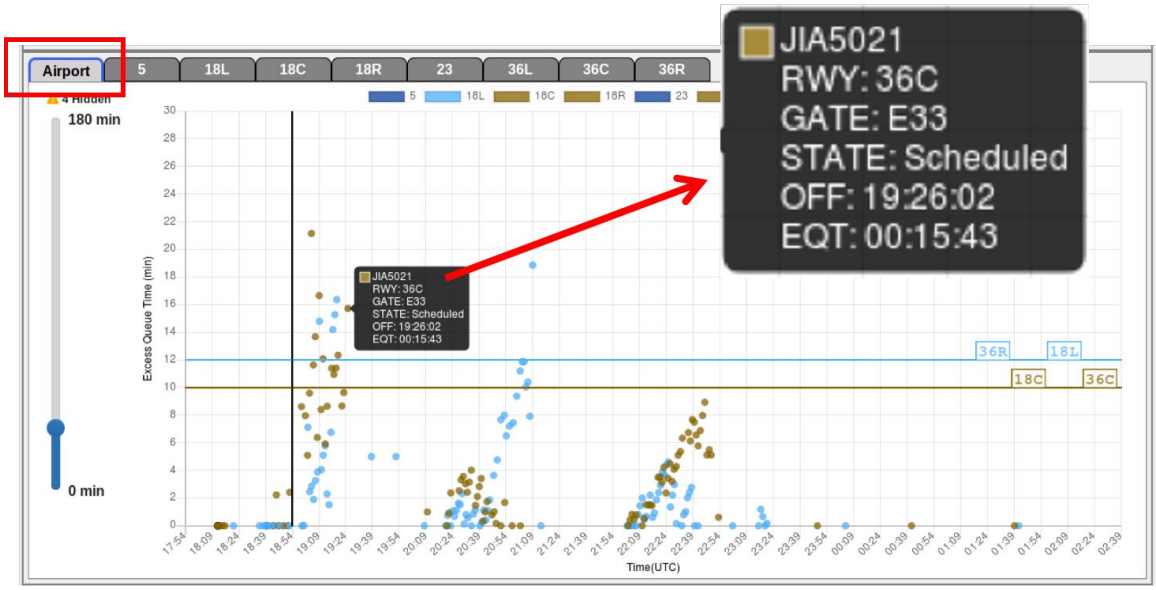


Figure 2.33. Hover over a data point in the Airport tab to display a data tag for the specific flight (in this example, the data point for flight JIA0521 is shown).

The vertical time slider to the left of the plot can be set from 0 to 180 min. This slider sets the maximum time (in minutes) plotted on the vertical axis. If there are flights that are not showing because they are outside of the range set by the slider, a yellow triangle with "# Hidden" is displayed above the slider indicating the number of flights that are not currently visible (Figure 2.34, left).

To change the maximum time shown on the data plot from the Airport tab:

Step 1: Click and hold the circle of the slider and move up or down to change the maximum Excess Queue Time, in minutes, shown on the vertical axis of the scatterplot.

Note: "Hidden" flights are those not visible on the plot because their Excess Queue Time is greater than the current maximum value of the y-axis. Use the vertical slider to increase the number of minutes on the y-axis and reveal "hidden" flights (Figure 2.34, right).

Figure 2.34. Use the slider to increase/decrease the maximum Excess Queue Time (in minutes) on the vertical axis. Increase the value to reveal "Hidden" flights. In this example, four flights were hidden before increasing the time value from 30 min to 55 min.

2.4.2.2 Runway Tabs

Each **Runway** tab shows a scatterplot for an individual runway (see an example in Figure 2.35). Each data point is plotted along the x-axis at either the actual or predicted takeoff time (UTC) of the flight. The height (y-axis) of the data point represents either the actual or predicted **Excess Queue Time** (i.e., the actual or predicted amount of time taxiing *beyond* unimpeded taxi time). Each departure flight is represented by a data point, which is color-coded for runway (blue on eastbound runway tabs, brown on westbound runway tabs). These plots consist of flights that are not constrained by an EDCT, APREQ, fix closure, or ground stop.

The vertical line represents Current Time (Figure 2.35):

- All data points to the **left** of that line represent *actual* Excess Queue Time (y-axis) for departure flights that have departed. These points are shown at the flight's *actual* takeoff time (x-axis).
- All data points to the **right** of that line represent *predicted* Excess Queue Time (y-axis) for flights that have not yet departed. These points are shown at the flight's *predicted* takeoff time.

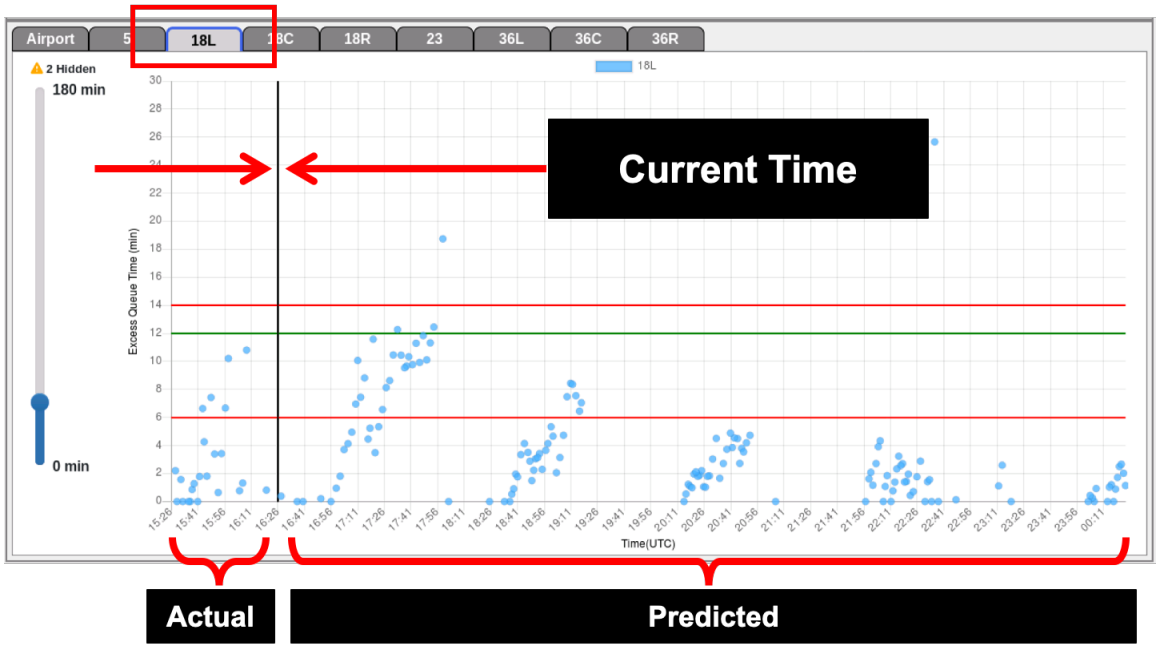


Figure 2.35. Excess Queue Time scatterplot (Runway Tab): Vertical line represents current time.

The Upper and Lower Thresholds (horizontal red lines) and the Target Excess Queue Time (horizontal green line) are displayed on each runway tab (Figure 2.36). These values are set on the Metering Parameters page (see Section 2.3.2.2).

Figure 2.36. Target Excess Queue Time (green line) and Upper and Lower Threshold (red lines).

Hovering over a data point reveals a data tag with information about that particular flight.

To see specific flight information for a data point on a Runway tab:

Step 1: Hover over a data point on the scatterplot.

Note: A data tag is temporarily displayed with information about that flight (Figure 2.37).

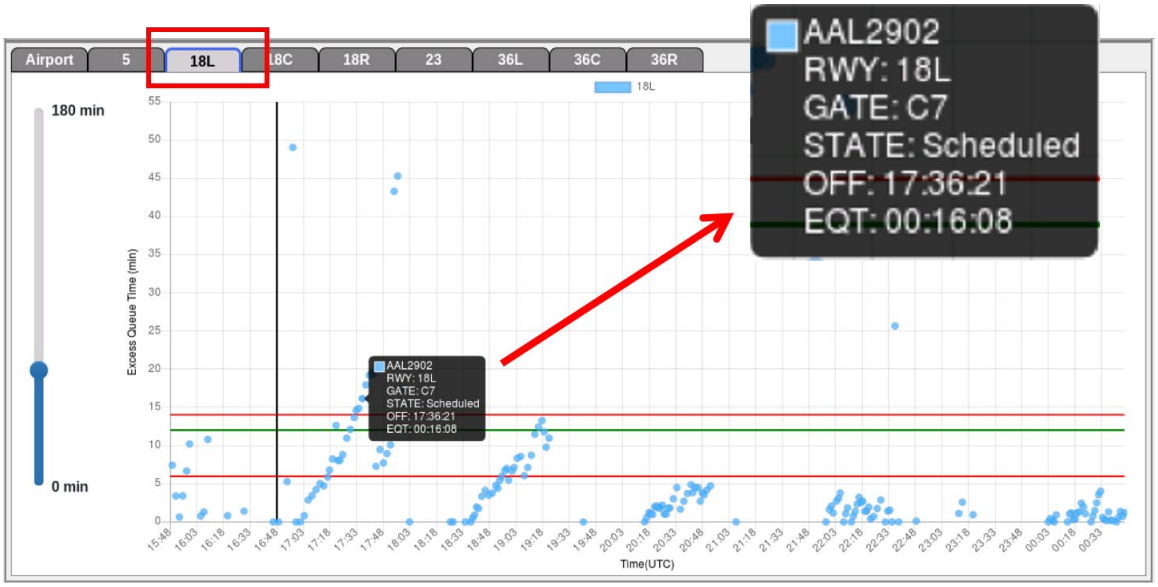


Figure 2.37. Hovering over a data point in a runway tab will show a data tag for the specific flight.

The vertical time slider to the left of the plot can be set from 0 to 180 min. This slider sets the maximum time (in minutes) plotted on the vertical axis. If there are flights that are not showing because they are outside of the range set by the slider, a yellow triangle with "# Hidden" is displayed above the slider indicating the number of flights that are not currently visible (Figure 2.38, left).

To change the maximum time shown on the data plot in a "Runway" tab:

Step 1: Click and hold the circle of the slider and move up or down to change the maximum Excess Queue Time, in minutes, shown on the vertical axis of the scatterplot.

Note: "Hidden" flights are those not visible on the plot because their Excess Queue Time is greater than the current maximum value of the y-axis. Use the vertical slider to increase the number of minutes on y-axis and reveal "hidden" flights (Figure 2.38, right).

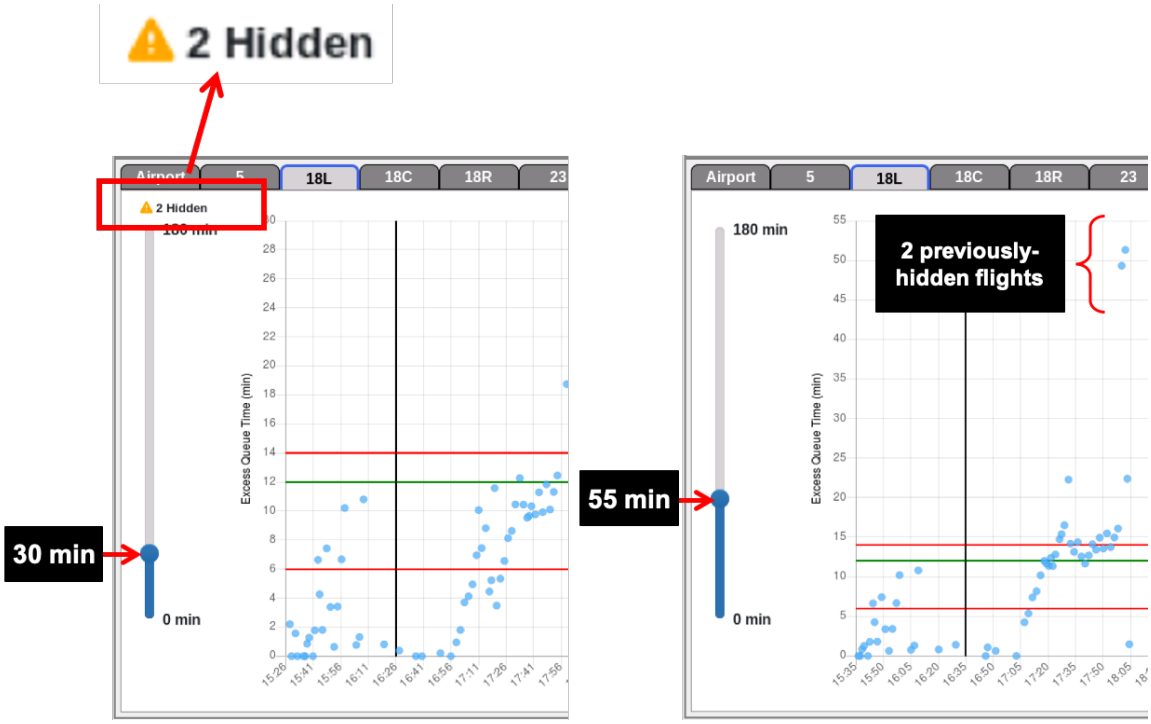


Figure 2.38. Use the slider to increase/decrease the maximum Excess Queue Time (in minutes) on the vertical axis. Increase the value to reveal "Hidden" flights. In this example, two flights were hidden before increasing the time value from 30 min to 55 min.

2.5 Feedback

Use the "Feedback" link in the Toolbar to submit feedback about ATD-2 tools (Figure 2.39).

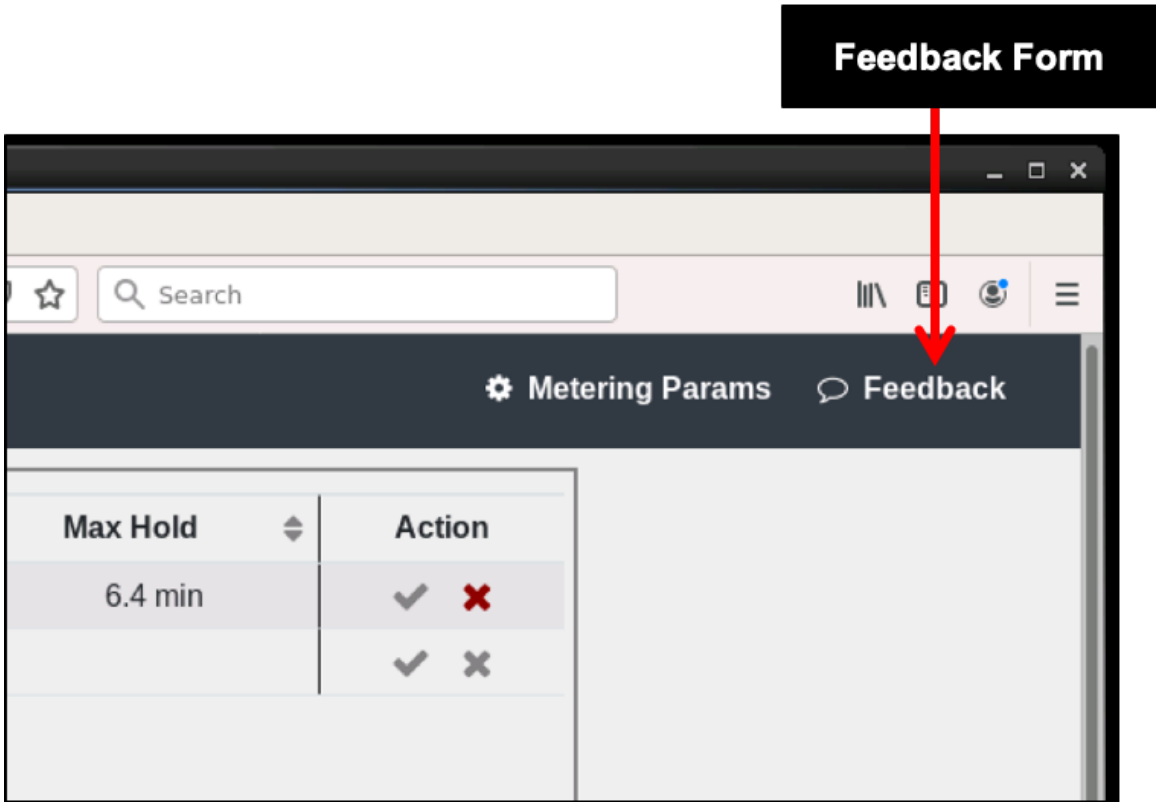


Figure 2.39. SMD Toolbar: Feedback link.

To submit feedback about the ATD-2 system:

Step 1: Select the "Feedback" link in the Toolbar to open the User Feedback Form (Figure 2.40).

Step 2: In the Position field, select user's job position from the dropdown menu.

Step 3: In the Subject field, select the general subject of feedback from the dropdown menu.

Step 4 (if necessary): If "Other" is selected in the Subject field, an additional field, "Enter subject," is displayed. Enter the subject in this text box.

Step 5: In the "Additional comments" field, enter feedback comments.

Note: If you are reporting a bug, please indicate the day, time, and specific flight numbers, if possible, so the issue can be investigated from the data archives.

Step 6: After entering feedback/information, select "Submit."

Note: The information will be transmitted to the ATD-2 team for review and action.

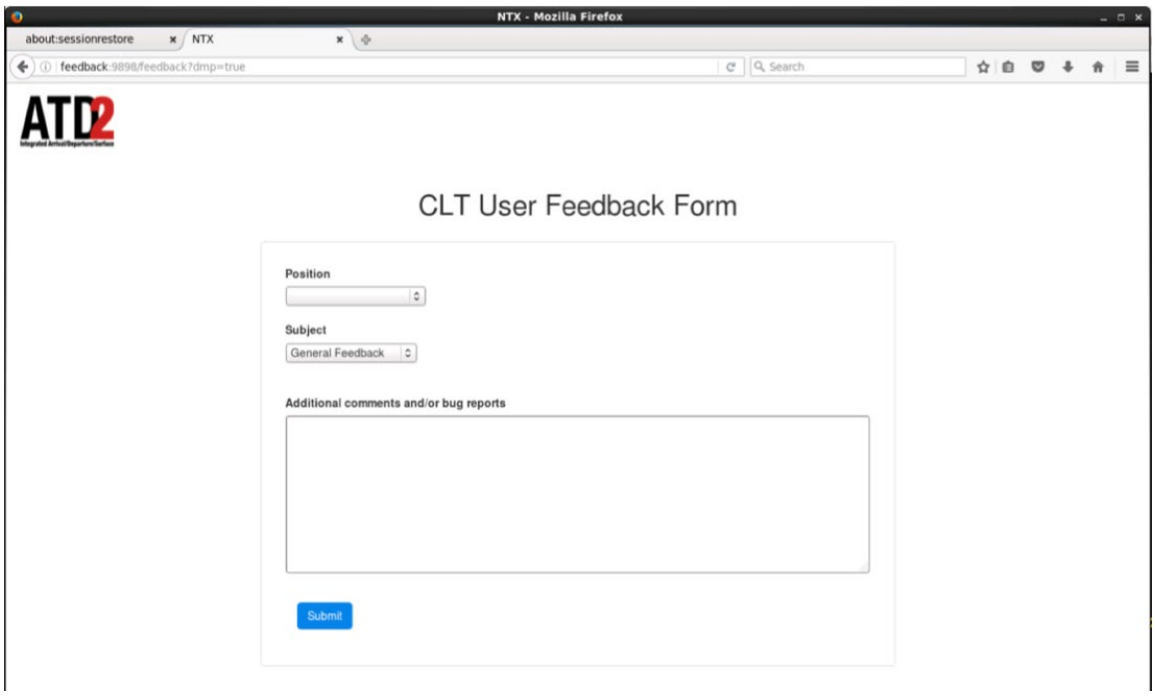


Figure 2.40. User Feedback Form page.

Thank you for taking the time to provide system feedback.

3 SMP Icons in ATD-2 Tools

ATD-2 strives to make consistent information available to every user interface. Both the STBO Client and RTC/RMTC contain icons that show the current state of metering being used by the ATD-2 system. Changes in the metering state are immediately reflected on all systems. Proposed SMP icons are shown in Table 5 and Runway-specific Metering icons are shown in Table 6.

Table 5. Proposed Surface Metering Program (SMP) Icons

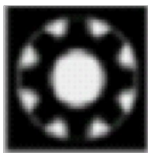
Icon	Definition	Available in ATD-2 Tools
	No proposed SMP.	• Ramp Manager Traffic Console (RMTC) • STBO Client
	A newly proposed SMP is available.	• Ramp Manager Traffic Console (RMTC) • STBO Client

Table 6. Runway Metering Icons

Icon	Definition	Available in ATD-2 Tools
	SMP Affirmed (Enabled) but not Active, on Runway <18L>.	• Ramp Traffic Console (RTC) • Ramp Manager Traffic Console (RMTC) • STBO Client
	SMP Active, on Runway <18L>.	• Ramp Traffic Console (RTC) • Ramp Manager Traffic Console (RMTC) • STBO Client
	No metering, SMP off.	• Ramp Traffic Console (RTC) • Ramp Manager Traffic Console (RMTC) • STBO Client

Appendix A: Acronyms

This appendix defines acronyms and terms that are used repeatedly throughout ATD-2 and this SMD User Manual.

Acronym	Term
AAL	American Airlines
AC	Aircraft
ACID	Aircraft Identifier
ACK	Acknowledge
ADW	Arrival / Departure Window
AFP	Airspace Flow Program
AIBT	Actual In-Block Time
ALDT	Actual Landing Time
AMA	Airport Movement Area
AMAT	Actual Movement Area entry Time
AOBT	Actual Off-Block Time
APREQ / CFR	Approval Request / Call For Release
ARR / DEP	Arrival / Departure
ARRFIX	Arrival Fix
ARTCC	Air Route Traffic Control Center
ASDE-X	Airport Surface Detection Equipment - Model X
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
ATD-2	Airspace Technology Demonstration 2
ATOT	Actual Takeoff Time
BOS	Boston Logan International Airport
CC	Configuration Change (Runway)
CDM	Collaborative Decision Making
CDR	Coded Departure Route
CLT	Charlotte Douglas International Airport
CSV	Comma-Separated Values (file type)
CTOP	Collaborative Trajectory Options Program

Acronym	Term
CTOT	Controlled Takeoff Time
DAL	Delta Air Lines
DB	DataBlock
DEPFIX	Departure Fix
DEST	Destination
DFW	Dallas / Fort Worth International Airport
DMP	Departure Metering Programs (synonymous to SMP)
EDCT	Expected Departure Clearance Time
EFTT	Earliest Feasible Takeoff Time
EOBT	Earliest Off-Block Time
ESTIBT	Estimated In-Block Time
ESTOBT	Estimated Off-Block Time
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
FAA	Federal Aviation Administration
FDX	FedEx
FUSION	Consolidates all available airport surveillance to simulate a single-sensor radar display system
GDP	Ground Delay Program
GS	Ground Stop
ICAO	International Civil Aviation Organization
ID	Identification
IDAC	Integrated Departure Arrival Capability
IOBT	Initial Off-Block Time
LGA	LaGuardia International Airport
LIBT	Airline In-Block Time
LOB	Long On Board
LOBT	Airline Off-Block Time
MIT	Miles-In-Trail
NASA	The National Aeronautics and Space Administration
nmi	Nautical miles

Acronym	Term
OIS	FAA Operational Information System
OPNEC	Operational Necessity
REQ	Request
RMTC	Ramp Manager Traffic Console
RTC	Ramp Traffic Console
RWY	Runway
SDT	Scheduled Departure Time
SIBT	Scheduled In-Block Time
SID	Standard Instrument Departure
SLDT	Scheduled Landing Time
SMA	Surface Movement Advisor
SMD	Surface Metering Display
SMP	Surface Metering Programs
SOBT	Scheduled Off-Block Time
STA	Scheduled Time of Arrival
STAR	Standard Terminal Arrival Route
STARS	Standard Automation Replacement System
STBM	Surface Time-Based Metering
STBO	Surface Trajectory-Based Operations
STOT	Scheduled Takeoff Time
SWIM	System-Wide Information Management
TBD	To Be Determined
TBFM	Time-Based Flow Management System
TEQT	Target Excess Queue Time
TFDM	Terminal Flight Data Manager
TFM	Traffic Flow Management
TFMS	Traffic Flow Management System
TIBT	Target In-Block Time
TLDT	Target Landing Time
TM	Traffic Management

Acronym	Term
TMA	Traffic Management Advisor
TMAT	Target Movement Area entry Time
TMI	Traffic Management Initiative(s)
TOBT	Target Off-Block Time
TRACON	Terminal RADAR Approach Control
TTOT	Target Takeoff Time
TZ	Track data from TFMS
UAL	United Airlines
UIBT	Undelayed In-Block Time
ULDT	Undelayed Landing Time
UMAT	Undelayed Movement Area entry Time
UNK	Unknown
UOBT	Undelayed Off-Block Time
UTOT	Undelayed Takeoff Time