Annex G – TI Developer Portal

Contents

Consultation Questions 1
Introduction 2
TI Phase 1a 2
TI Developer Portal 3
Scope of the TI Phase 1b TI Developer Portal update 3
Authentication and authorisation 4
Get MPxN Tariff Details 7
Tariff Interoperability Event Notifications 7
Enduring Governance 11

Consultation Questions

Question G1: Do you agree with the TI Phase 1b content within the TI Developer Portal? If not, please identify the relevant section, explain why a change is required, its potential impact and your proposed solution.

Question G2: Have you identified any additional changes to the TI content within the TI Developer Portal necessary to support TI Phase 1b? If so, please identify the relevant section, explain why a change is required, its potential impact and your proposed resolution.

Question G3: Do you agree with consolidating TI Phase 1a and Phase 1b developer guidance and machine-readable specifications in the TI Developer Portal? Please explain your answer, including any concerns about access, version control, migration or maintaining compatibility with the effective Phase 1a baseline.

Introduction

1. The TI Developer Portal provides technical guidance and machine-readable information for developers. It builds on the portal that has been implemented into the REC for TI Phase 1a. The TI Phase 1b update includes the technical details for TI Energy Suppliers and RTI Users to access and provide the required account specific tariff information for TI Phase 1b, using standardised API schema.

2. The proposed Phase 1b content has been informed by responses to the November 2025 consultation, subsequent industry engagement and technical review. Experience from TI Phase 1a implementation has informed the proposals. This consultation seeks evidence on their completeness and workability. The proposed TI Phase 1b testing approach is set out in Annex C.

3. This annex does not cover TI Energy Supplier and RTI User interactions with the CCS in relation to account holder verification. Parties should review the design summary in Annex B and RECCo's consultation on the CCS arrangements[1] to understand the detailed end-to-end process.

TI Phase 1a

4. A decision to introduce the TI Phase 1a online developer portal into the REC was made by government on 29 October 2026 and the change was implemented into the REC on 06 November 2026. For TI Phase 1a this artefact is known as the TI API Technical Specification. However, we propose to rename this as the TI Developer Portal, holding technical guidance and machine readable content for both TI Phase 1a and 1b, and have a separate (new) TI API Technical Specification as described in Annex E.

5. For clarity, the content for TI Phase 1a has not been amended (other than for the proposed change to the MM80005 described in Annex B). It has however been moved to a new platform which will update the way that this information is visually displayed. This platform change is being made at the request of RECCo so that there is a single platform that is used for TI Phase 1a, TI Phase 1b and CCS.

[1] Consumer Consent Solution consultation

TI Developer Portal

6. The TI Developer Portal for TI Phase 1a and 1b can be accessed through the following link, note that this is illustrative and should not be built against until consultation has concluded:

    - TI Phase 1a
    - TI Phase 1b

Scope of the TI Phase 1b TI Developer Portal update

7. The proposed enhancements to the TI Phase 1a developer portal baseline for TI Phase 1b have been made following review of responses to the November 2025 consultation, further industry engagement and detailed technical review.

8. The TI Phase 1b TI Developer Portal provides the technical content for the following interactions, which are described in more detail later in this annex:

    a. A 'Get MPxN Tariff Details Request' to be sent by an RTI User to a TI Energy Supplier and for the TI Energy Supplier to return the Tariff Id applicable to a specific MPxN[2] where an account holder has provided permission via the CCS;

    b. The 'SSF TI Transmitter Configuration Request' and 'SSF TI Transmitter Configuration Response', by which an RTI User obtains the TI Shared Signals Framework (SSF)[3] transmitter configuration, from a TI Energy Supplier, identifying the endpoints used to establish and verify a TI SSF stream;

    c. The registration and daily verification messages by which an RTI User establishes and maintains a TI SSF stream with each TI Energy Supplier from which it wishes to receive TI Event Notifications;

[2] Each gas and electricity supply/metering point has a unique reference number. For electricity this is the Meter Point Administration Number (MPAN) and for gas it is the Meter Point Reference Number (MPRN). Collectively these are referred to as Meter Point X Numbers (MPxNs).

[3] The Shared Signals Framework (SSF) is an OpenID Foundation standard for one party (the transmitter) to notify another (the receiver) that an event has occurred, using signed Security Event Tokens delivered over a subscribed stream.

d. A ‘Notification of TI Event’ message, issued by a TI Energy Supplier to an RTI User where the tariff or account information applicable to a specific MPxN changes. This is delivered under the TI SSF message. This informs the RTI User that the TI Energy Supplier has a TI Event Notification that it wants to share; and

e. A ‘Get TI Event Details Request’ to be sent by an RTI User to a TI Energy Supplier, following a ‘Notification of TI Event’, and for the TI Energy Supplier to return the details of the event(s) affecting the MPxN(s) covered by the relevant permission in its ‘Get TI Event Details Response’.

9. REC Schedule 35 includes end-to-end processes supported by both TI and CCS elements as set out below:

   a. Account holder verification, permission, the issue and revocation of tokens, and the generic SSF stream mechanics are set out in the CCS arrangements.

   b. The CCS Directory check that a TI Energy Supplier performs on an RTI User’s entity identifier before accepting a stream registration is an interaction between the TI Energy Supplier and the CCS Directory and is therefore defined under the CCS arrangements.

   c. The messages exchanged directly between an RTI User and a TI Energy Supplier are defined under the TI arrangements[4].

   d. Where the two overlap, the TI Developer Portal cross-references to the CCS documentation rather than restating it.

Authentication and authorisation

10. Each request for account specific tariff information requires authentication. The CCS acts as the sole authorisation server for the account holder-permissioned routes (Get MPxN Tariff Details and Get TI Event Details). TI Energy Suppliers do

[4] The specific TI messages are: Get MPxN Tariff Details Request, Get MPxN Tariff Details Response, TI SSF Notification Registration Request, TI SSF Notification Registration Response, SSF TI Verification Request, SSF TI Event Verification Response, SSF TI Transmitter Configuration Request, SSF TI Configuration Response, SSF TI Verification Request, SSF TI Verification Response, Notification of TI Event, Get TI Event Details Request and Get TI Event Details Response.

not operate their own authorisation server for the purposes of the TI arrangements, and do not issue credentials to RTI Users. TI Energy Suppliers do, however, operate an identity provider interface for account holder verification which is detailed within the CCS Arrangements Schedule and CCS API Technical Specification.

11. The authorisation arrangements follow the FAPI 2.0 Security Profile as described in the CCS provisions. In summary:

    a. the RTI User initiates authorisation with the CCS using a 'Pushed Authorization Request';

    b. the consumer completes account holder verification with their TI Energy Supplier, and grants permission within their CCS account;

    c. the CCS issues an authorisation code, which the RTI User exchanges for a refresh token and an access token;

    d. the RTI User presents the access token to the TI Energy Supplier's Supplier Endpoint; and

    e. the TI Energy Supplier validates the token before providing the MPxN specific Tariff Id.

12. **Two tokens** are issued, and they serve different purposes:

    a. **Refresh token**. An opaque value held by the RTI User and presented only to the CCS. It is valid for the duration of the permission it was issued against, subject to a maximum of three years. It is used to obtain new access tokens without involving the account holder again.

    b. **Access token**. A signed JSON Web Token (JWT), valid for 30 minutes, which the RTI User presents to the TI Energy Supplier to show that it has permission in place from the account holder and includes details of the data that can be accessed by the specific RTI User and how long for. It is the only token a TI Energy Supplier ever receives.

13. The access token is presented on every request to a TI Energy Supplier under the account holder-permissioned route, in the HTTP Authorization header, in the form **Authorization: Bearer <access token>**. It is never carried within a message payload. There is no session or connection state established between an RTI User and a TI Energy Supplier: each request is validated independently, and a request without a valid token is rejected with an HTTP 401 response[5] and no message body.

14. Within the lifetime of an access token, an RTI User may make more than one request using the same token — for example, one request for each of several MPxNs covered by the same permission. Once the token expires, the RTI User obtains a new one from the CCS using its refresh token.

15. Where an account holder has MPxNs with different TI Energy Suppliers, the RTI User will need to complete the applicable authorisation and permission journey for each TI Energy Supplier.

16. The access token is sender-constrained: it is bound to the RTI User's client certificate and is usable only on a mutually authenticated TLS connection presenting that certificate. A token presented without the corresponding certificate is rejected.

17. The validation a TI Energy Supplier performs on an access token – including signature, expiry, audience and certificate binding – is defined under the CCS arrangements. Those requirements are not restated in the TI Developer Portal or the TI API Technical Specification. In addition to that validation, the TI Energy Supplier confirms that the MPxN in the request path is covered by the permission the access token represents or, for a TI Event Details request, that the Grant Id[6] in the request path matches the Grant Id carried in the token.

18. The account holder verification is performed by the TI Energy Supplier on behalf of the CCS. For that interaction the TI Energy Supplier authenticates the account holder and returns, to the CCS, a stable identifier for the account holder together

[5] HTTP 401 Unauthorised: means a request failed because it lacked valid authentication credentials for the target resource.

[6] A Grant Id is the unique identifier assigned by the CCS to an account holder's permission (a "Grant" under the CCS arrangements). It is carried in the access token and in the Notification of TI Event so that a TI Energy Supplier and an RTI User can refer to the same permission without exchanging account holder or MPxN details.

with the MPxNs for which that account holder is the account holder. The interaction is defined and governed under the CCS arrangements and is not restated here. TI Energy Suppliers should note that they will be required (under the CCS Arrangments) to operate an identity provider interface, and to register the associated endpoints in the CCS Directory. TI Energy Suppliers should refer to the CCS arrangements for the mechanism they are required to support.

Get MPxN Tariff Details

19. An RTI User acting on an account holder's behalf needs to establish which tariff applies in relation to a specific MPxN. This is account specific information and is therefore made available only where the account holder has given their permission.

20. The TI Developer Portal provides a single route for this purpose: **GET /tariff/{mpid}/mpxn/{mpxn}**.

21. One request is made per MPxN. Where a permission covers several MPxNs, the RTI User makes a separate request for each.

22. The Get MPXN Tariff Details Response returns the Tariff Id only. The RTI User then retrieves the tariff pricing data by using that Tariff Id in the Get Tariff Details Request that is being implemented through TI Phase 1a. This avoids duplicating the tariff details payload in more than one message and keeps a single source of tariff pricing data.

23. Where the MPxN is unknown to the TI Energy Supplier, or is not covered by the permission the request is made under, a HTTP 404 response[7] is returned. The two cases are deliberately not distinguished, so that a response to the RTI User does not disclose whether a given MPxN exists at that TI Energy Supplier. The full list of applicable HTTP error codes is set out in the TI API Technical Specification.

Tariff Interoperability Event Notifications

24. Where an account holder has given permission for their tariff information to be shared, and that permission includes ongoing TI Event Notifications, the TI Energy Supplier notifies the RTI User when that information changes. This removes the

[7] HTTP 404: MPxN unknown, or Permission not granted for the requesting RTI User.

need for RTI Users to make repeated requests in order to detect a change. TI Event Notifications continue for the duration of the permission.

25. Five event types are provided for:

    a. **Change of Tariff Id** – the tariff identifier applicable to the MPxN is changing to a different Tarriff Id;

    b. **Change of Pricing Information** – the unit rate, standing charge or time variables under the Tariff Id applicable to the MPxN is changing. This event is not issued for dynamic tariffs, where the effective from and to dates within the tariff pricing data already indicate the change;

    c. **Change of Supplier** – the TI Energy Supplier is ceasing, or has ceased, to be the registered supplier for the MPxN;

    d. **Change of Occupier** – the TI Energy Supplier has become aware that the account holder is, or will no longer be, associated with the MPxN. This may be notified retrospectively; and

    e. **Supplier Cessation** – the TI Energy Supplier is ceasing to share account specific tariff information for MPxNs it provides on a voluntary basis.

26. The last three event types noted above signal that the relationship on which the permission depends has changed or is ending. Where the individual who granted the permission is no longer the appropriate person, it is the RTI User's responsibility, as an Authorised Third Party (ATP)[8] under the CCS arrangements, to revoke the permission through the CCS.

27. Before issuing any notification, the TI Energy Supplier confirms from its own records that no revocation of the relevant permission has been notified to it by the CCS. CCS Permission Revocation Notifications to TI Energy Suppliers and RTI Users are issued in accordance with the CCS SSF, as further defined in the CCS provisions.

28. TI SSF notifications from the TI Energy Supplier to the RTI User are issued in accordance with the TI SSF. This includes the notification informing an RTI User

[8] An Authorised Third Party is a type of CCS User.

that an event has occurred (the Notification of TI Event market message), but not the notification of the event itself. For TI SSF notifications, the TI Energy Supplier acts as the transmitter and the RTI User acts as the receiver. Each TI Energy Supplier is required to publish its SSF transmitter configuration at the well-known location defined by the SSF (/.well-known/ssf-configuration) and to make it available to RTI Users through a SSF TI Transmitter Configuration Request and Response:

a. The RTI User obtains the TI Energy Supplier's SSF transmitter configuration endpoint from the CCS Directory,

b. Using this endpoint, the RTI User fetches the SSF transmitter configuration using the SSF TI Transmitter Configuration Request, and receives the SSF TI Transmitter Configuration Response, which identifies the delivery method supported, the stream registration and verification endpoints.

c. The RTI User then sends a TI SSF Notification Registration Request to register its SSF stream with a TI SSF Notification Registration Response received from the TI Energy Supplier.

d. On an ongoing basis, RTI Users must, at least daily, ensure that the SSF stream remains active by sending the SSF TI Verification Request and recording receipt of the SSF TI Verification Response.

29. The TI SSF Transmitter Configuration message is named distinctly from the equivalent CCS SSF Transmitter Configuration message; its content is the same, however the transmitter and receiver differs in each instance.

30. Each TI SSF notification is a Security Event Token: a signed JSON Web Token issued by the TI Energy Supplier and addressed to a single RTI User. The RTI User validates the signature against the keys published by the TI Energy Supplier before acting on it. The structure of the token is defined in the TI Developer Portal. A single, generic TI event type identifier is used for all five event types: the notification does not indicate which of the five events has occurred.

31. Notifications are delivered by push only. TI Energy Suppliers are not required to support a polling mechanism, and RTI Users cannot poll for notifications.

32. A notification identifies only the permission to which it relates, by its Grant Id, together with the datetime at which the underlying event occurred. It does not include the event type, the affected MPxN, the new tariff identifier, the effective date of the change, or any pricing values. All of that is provided only in response to a Get TI Event Details request carrying a valid access token.

33. On receiving the notification (the Notification of TI Event), the RTI User obtains a new access token from the CCS using its refresh token and presents it to the Get TI Event Details route (**GET /event-notifications/{grant_id}**) in a Get TI Event Details Request to obtain the details of the event(s). The Get TI Event Details Response identifies, for each affected MPxN, the event type, the datetime the event was raised and the datetime from which it takes effect and, for event types 'Change of Tariff Id' or 'Change of Pricing Information', the Tariff Id concerned. The RTI User then retrieves the tariff pricing data for that Tariff Id using the Get Tariff Details request implemented through TI Phase 1a. Where a single event affects more than one MPxN under the same permission, each MPxN is listed. Where the permission has been revoked since the notification was issued, and this has not yet been recorded by the TI Energy Supplier, the CCS will not issue an access token, and no further information is provided.

34. On receipt of a Notification of TI Event, the RTI User records the notification and acknowledges it to the TI Energy Supplier before undertaking any further processing. The acknowledgment is the HTTP 202 response the RTI User returns to the push notification once that notification has been durably stored; no separate acknowledgment message is sent. Where no acknowledgement is returned, the TI Energy Supplier re-sends the notification in accordance with the retry strategy set out in the TI Arrangements Schedule.

35. Each RTI User that wishes to receive TI Event Notifications is required to establish a single SSF stream with each relevant TI Energy Supplier, using the standard stream management mechanism defined through the TI SSF. The RTI User sends a TI SSF Notification Registration Request naming the delivery endpoint it has registered in the CCS Directory and the TI event type it requests, and the TI Energy Supplier returns a TI SSF Notification Registration Response containing the stream configuration. Before returning the response, the TI Energy Supplier confirms with the CCS Directory, using the RTI User's entity identifier, that the RTI User is registered and entitled to establish a stream. The RTI User then sends an SSF TI Verification Request on establishing the stream, after any change to it,

and at least once per day thereafter; the TI Energy Supplier accepts the request with an HTTP 204 response carrying no body, and issues a verification event on the stream; that event is the SSF TI Verification Response, Where no verification event is received within five minutes, being the period set out in the TI Arrangements Schedule, the RTI User raises a query with the TI Energy Supplier. These stream management messages, and the SSF TI Transmitter Configuration Request, are authenticated by mutual TLS and do not use an access token.

36. The TI Phase 1b messages between an RTI User and a TI Energy Supplier are therefore: Get MPxN Tariff Details Request and Response; SSF TI Transmitter Configuration Request and Response; TI SSF Notification Registration Request and Response, SSF TI Verification Request and Response, Notification of TI Event; and Get TI Event Details Request and Response. Their definition in the TI Developer Portal is aligned to the corresponding market messages in the EMDS (Annex F) and to the interface tables in the Schedule 35 (Annex D).

Enduring Governance

37. The TI Developer Portal will be a Category 3 Product within the REC. As set out in REC Schedule 5: Change Management (Section 29), this means that, following implementation of the TI Phase 1b arrangements and any subsequent TI phases by government, RECCo, as the 'Responsible Provider' will raise changes, consult with impacted parties where required, and determine if any future updates should be made.

38. The TI Developer Portal references data items and market messages. These are part of the REC Data Item Catalogue and Market Message Catalogue which form part of the EMDS (see Annex F). It also references information held in the new TI API Technical Specification (see Annex E). As the Data Item Catalogue, Market Message Catalogue and the new TI API Technical Specification are REC Category 2 products, any updates (outside of this government led TI project) must be progressed via the standard REC change process set out in REC Schedule 5 (Section 7 to 22). RECCo will be responsible for maintaining the TI Developer Portal and for keeping it aligned with the EMDS and the TI API Technical Specification.

39. Implementation of the changes set out within this annex will be delivered through the Secretary of State's section 245 Energy Act powers. Following implementation,

any subsequent operational changes to the TI Developer Portal are expected to follow the standard Category 3 change process to enable delivery of change to support lower-level technical design, within a shorter timescale, although the Secretary of State may use their powers where considered necessary.