Network Modification Considerations

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Agenda

- General considerations
- Advance notifications
- Database updates
- Switched access SWC consolidation
- DSL and SPA considerations
- Cloud switching considerations
- Summary

General considerations
EC requirements

- ILECs must continue to meet all applicable state and federal requirements, and pool participants must abide by NECA Tariff FCC No. 5.
  - Use network to offer services that meet the requirements of its certificate of public convenience and necessity
  - Be an eligible telecommunications carrier and provide voice telephony service in accordance with 47 C.F.R. § 54.101 to receive federal Universal Service Fund support
  - Have a local tariff on file with the state PUC (where required)

NECA

General considerations
EC requirements

- ILECs must continue to meet all applicable state and federal requirements, and pool participants must abide by NECA Tariff FCC No. 5. (cont.)
  - Provide local exchange service to retail customers
  - Charge end user customers the interstate subscriber line charge and access recovery charge where applicable
  - Bill access charges based upon its intrastate and interstate tariffs
    - Be able to determine the jurisdiction of traffic
    - Measure its traffic and bill end office charges including local switching and information surcharge (where applicable)
    - Report minutes and revenues to the NECA pools and to the FCC and USAC for CAF ICC support calculations

General considerations
EC requirements

- ILECs must continue to meet all applicable state and federal requirements, and pool participants must abide by NECA Tariff FCC No. 5. (cont.)
  - Local and tandem switches must be located in the same LATA as the end users served
    - EC may use its own switch or
    - Obtain switching functionality from another entity through:
      - Lease or
      - Service agreement
    - In some cases, the ILEC may obtain controller functionality from a third party located outside the LATA as long as the traffic itself is not routed outside the LATA

General considerations
Recategorization and cost treatment

- Cost company
  - Review and update its categorization to reflect the current use of the facilities for cost study and USF reporting. For example:
    - End office or remote switch is converted to a concentrator
      - Facilities from the subscriber premises to the remaining end office switch location will be treated as loop facilities
      - Requires a recategorization of cable and wire facilities and central office equipment from switching and transport to loop wherever SWCs are eliminated in the study area
      - Reclassification of existing investment from switching and transport to circuit and loop investment may require an adjustment to the EC's eligible recovery to avoid double recovery

General considerations
Recategorization and cost treatment

- Cost company (cont.)
  - An ILEC providing facilities or nontariff services to another EC must remove the associated cost and expense from its cost study and USF reporting
    - Facilities may include but are not limited to switching provided under contract to another EC and loop facilities leased to another EC to serve the end users outside its own study area
  - Revise access billing and revenue reporting
    - Must reflect effective NECA Tariff FCC No. 4 SWC and billing percent data
    - Update rates to reflect any rate band changes that may result from switch consolidation

General considerations
Average schedule treatment

- Average schedule company
  - When an average schedule company consolidates its switches, it will have to follow the same tariff, regulatory and NECA reporting rules as a cost company

Source: https://44ideas.net/

Advance notification

- Network reconfigurations require advance notification to customers and connecting carriers
  - Elimination of end offices, including remote switches, inclusion of new end office switches or a change in tandem homing arrangements
    - Written notification of planned changes and the expected due date for each change
      - Six months
    - Depending on type of network reconfiguration, notification may be necessary for IXCs and end users (including switched or special access customers)

Advance notification

- If EC has lost its rural exemption status
  - Additional public notifications – FCC rules require public notice when changes will affect:
    - A competing service provider's performance or ability to provide service
    - The EC's interoperability with other service providers
    - How customer premises equipment is attached to interstate network
- Industry standard
  - NECA Tariff FCC No. 5 Section 2.1.9

Database updates
SWC classification

- Changes to the overall functionality of a switch can affect the classification and access billing, and require an update to industry databases
- Use RAO 21, RAO 6, Part 32 rules and NECA Reporting Guidelines as guidance for the classification of switches, transmission equipment and expenses
  - EC should review its equipment and functions performed and classify equipment accordingly

Database updates

- ILEC must update Local Exchange Routing Guide and NECA Tariff FCC No. 4 to reflect network changes
  - Local Exchange Routing Guide – aka the LERG™
    - Provides physical routing details to allow proper routing and completion of calls
    - Includes current data and future activity
  - NECA Tariff FCC No. 4
    - A NECA database that details information on every EC switch for ordering and billing interstate access services
    - Billing authority

Switched access SWC consolidation

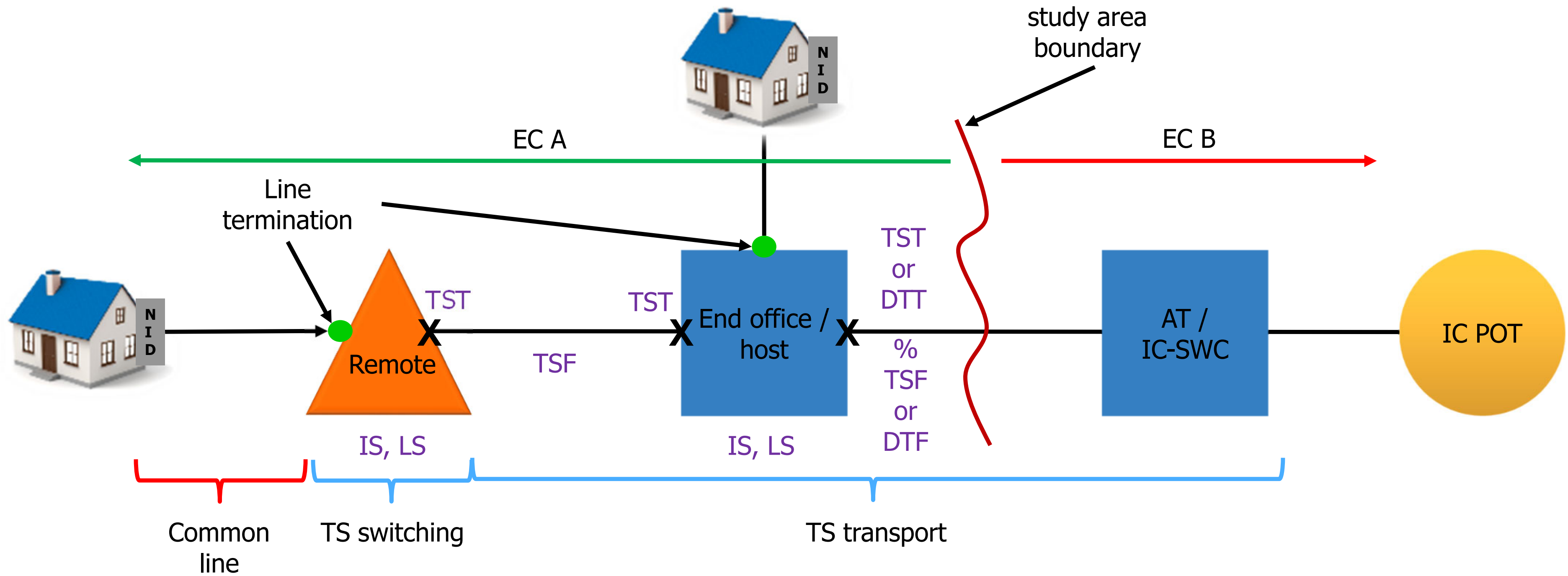
- Local switching within the study area

Scenario A:
Switch consolidation with one surviving SWC, classified as an end office

Source: Office 365

Switched access SWC consolidation

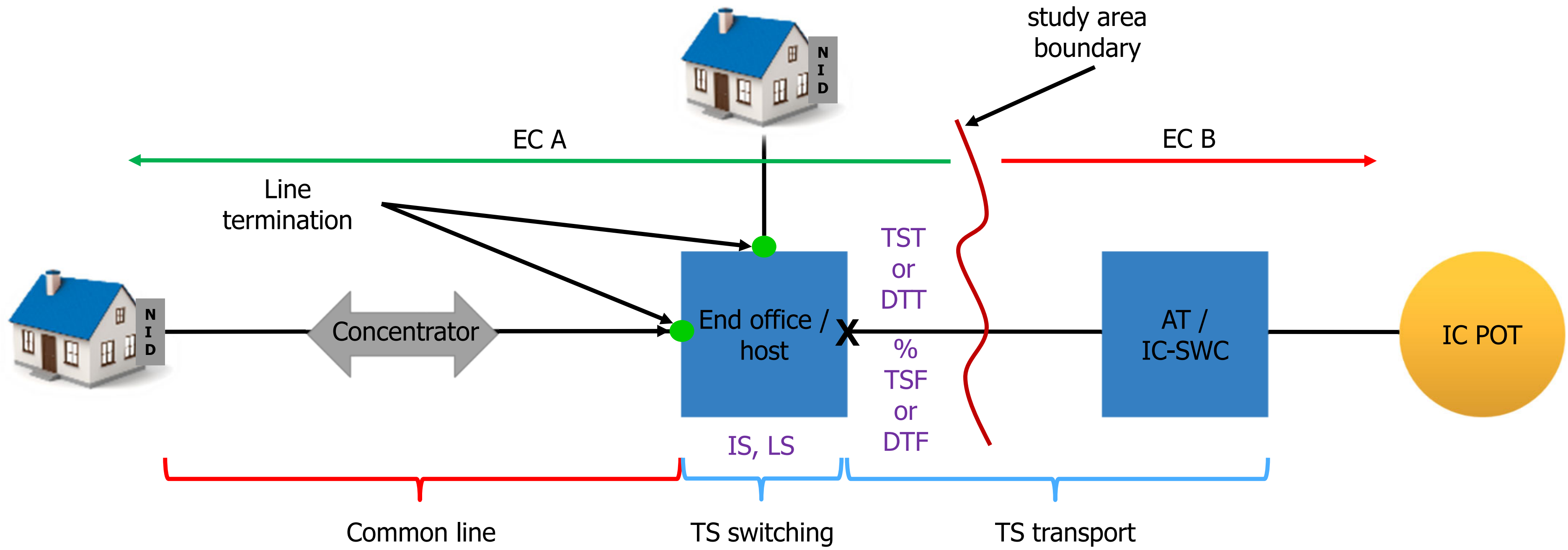
- Before switch consolidation



When two or more study areas on route, TSF/DTF between the host office and AT/IC-SWC is based on meet point billing agreement as filed in NECA Tariff FCC No.4

Switched access SWC consolidation
Scenario A – end office switching within study area

- After switch consolidation



Note: Study areas are not required to be adjacent but must be within the same LATA

Switched access SWC consolidation
Scenario A – end office switching within study area

- Consolidating multiple Class 5 switching offices or host/remote complexes to a single Class 5 switch remaining within the study area boundary
  - Ensure its subscriber lines are terminating at the surviving Class 5 switch within its study area boundary
  - Bill local switching, information surcharge, tandem switched terminations (where applicable) and its portion of tandem switched facility based on its tariff rates

Switched access SWC consolidation

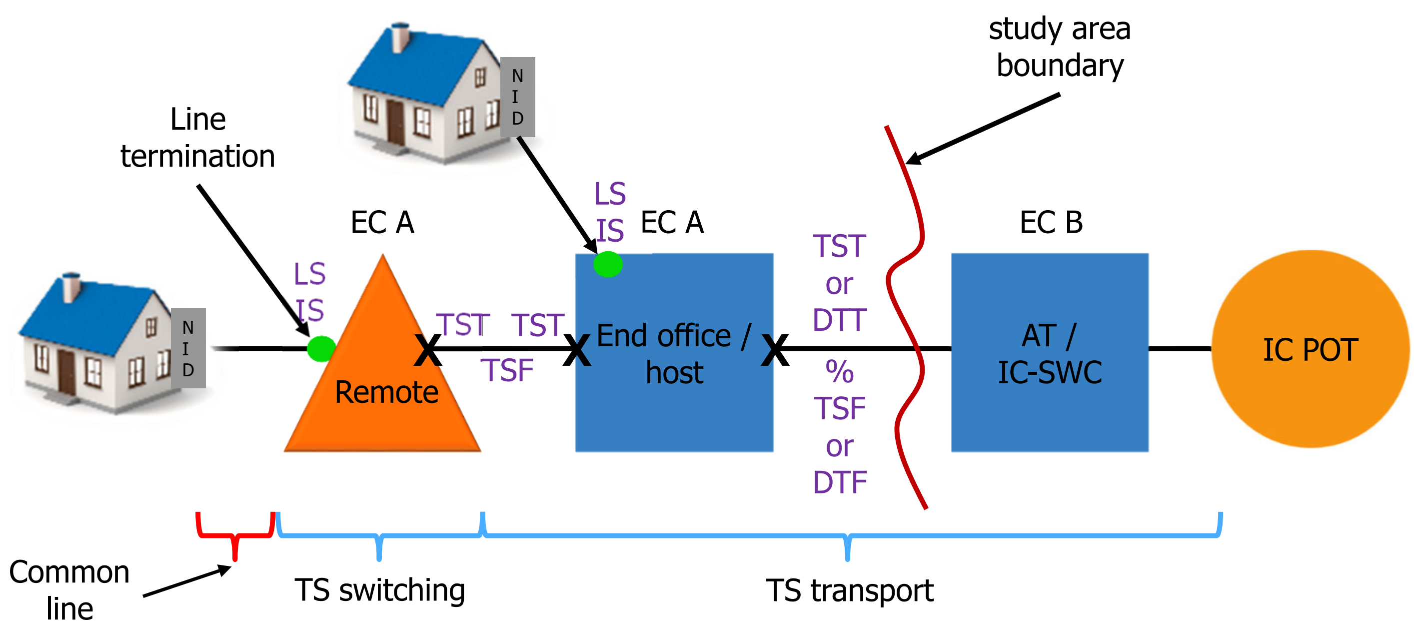
- Local switching within the study area

Scenario B:
Switch consolidation with one surviving SWC, classified as a remote

Source: Office 365

Switched access SWC consolidation
Scenario B – remote switching within study area

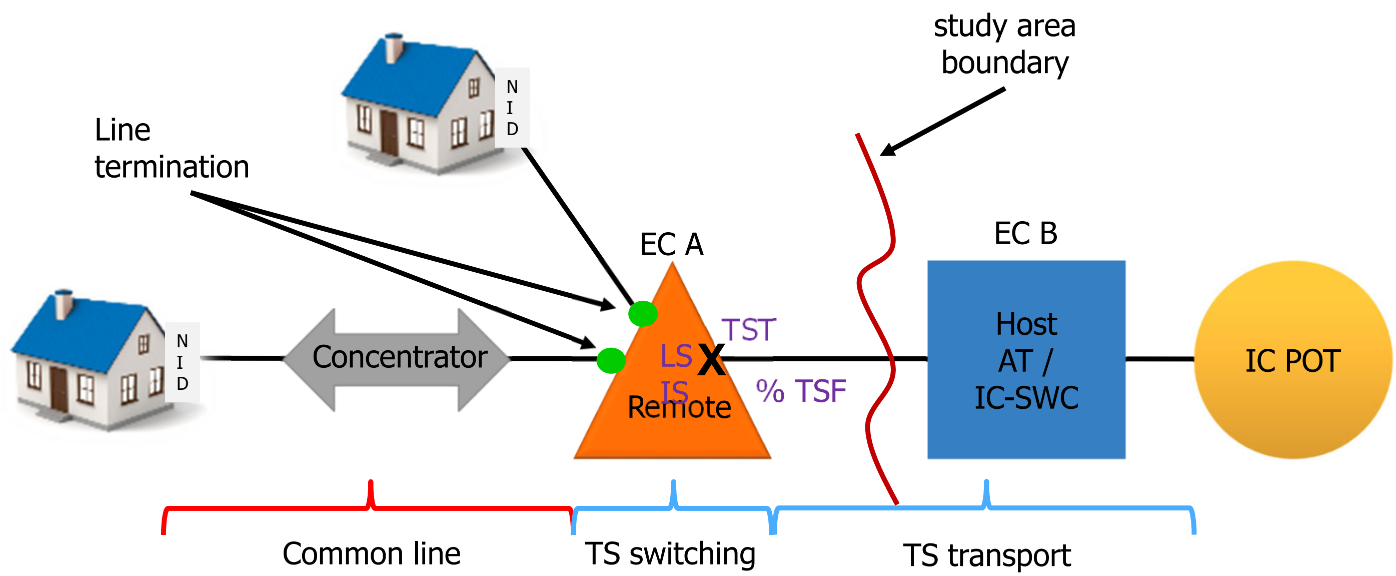
- Before switch consolidation



When two or more study areas on route, TSF/DTF between the host office and AT/IC-SWC is based on meet point billing agreement as filed in NECA Tariff FCC No.4

Switched access SWC consolidation
Scenario B – remote switching within study area

- After switch consolidation



Note: Study areas are not required to be adjacent but must be within the same LATA

Switched access SWC consolidation
Scenario B – remote switching within study area

- Consolidating multiple Class 5 switching offices or host/remote complexes to a single remote switch remaining within the study area boundary
  - Ensure its subscriber lines are terminating at the surviving remote and classify the equipment accordingly
  - Bill local switching, information surcharge, a tandem switched termination (where applicable) and its portion of tandem switched facility for the remote SWC to host SWC separately measured segment based on its tariff rates

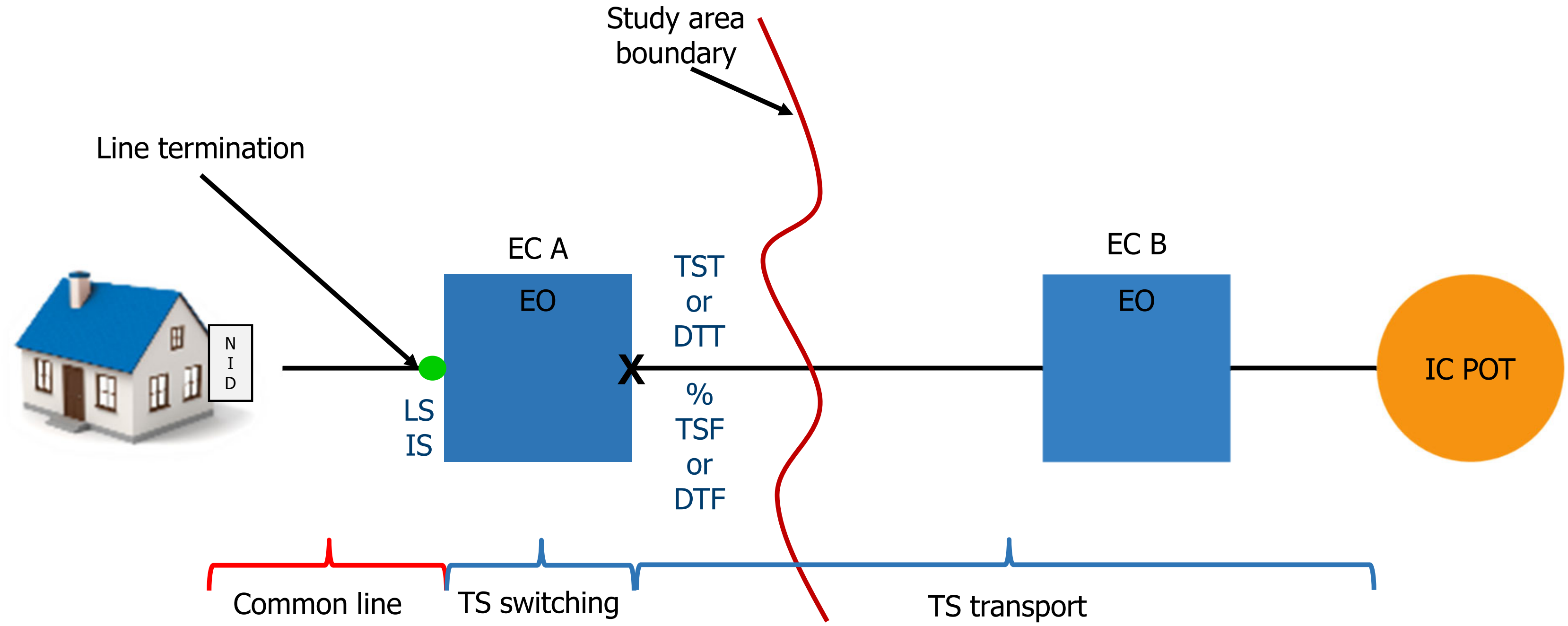
Switched access SWC consolidation
Scenario C – end office switching outside of study area

- Local switching outside the study area

Scenario C:
Switch consolidation with one surviving SWC located outside the study area, classified as an end office

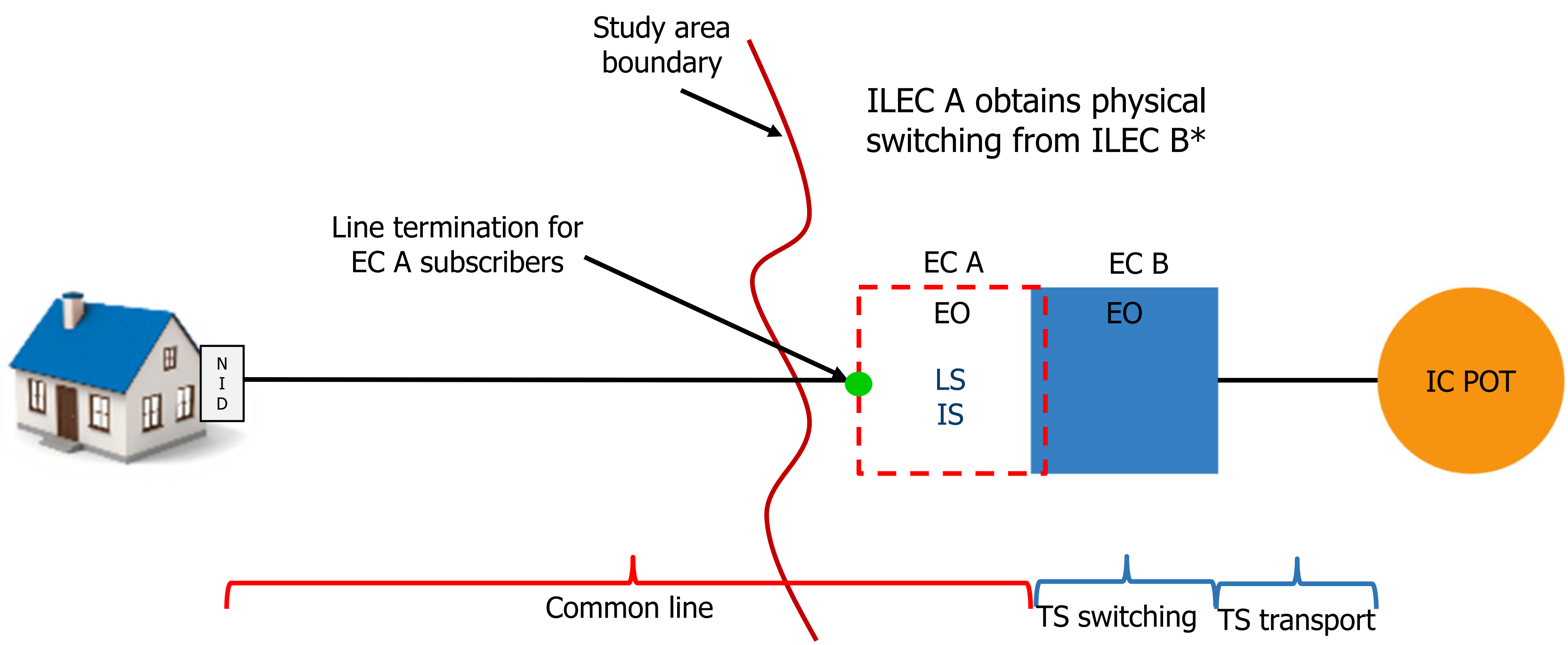
Switched access SWC consolidation
Scenario C – end office switching outside of study area

- Before switch consolidation



Switched access SWC consolidation
Scenario C – end office switching outside of study area

- After switch consolidation



*Study areas are not required to be adjacent, but switch and connecting tandem must be within the same LATA

Switched access SWC consolidation

Scenario C – end office switching outside of study area

- Consolidating multiple Class 5 switching offices or host/remote complexes to a SWC located outside the study area boundary
  - Ensure its subscriber lines are terminating at the switch located outside its study area boundary
  - EC must bill end office charges including local switching and information surcharge

Switched access SWC consolidation
Scenario C – end office switching outside of study area

- Consolidating multiple Class 5 switching offices or host/remote complexes to a SWC located outside the study area boundary (cont.)
  - The distant switch provider
    - Will not bill local service, SLCs or ARCs, local switching or information surcharge on traffic to or from those end users
    - Will bill transport for this traffic based on its pass-through portion of the meet point billing agreement, based on its own tariff rates
    - Will not report interstate access minutes originated or terminated to subscribers outside its study area, however, the pass-through traffic sensitive switched access revenues are reportable

Special access considerations

- If EC elects to remove all switches from its study area and establish a new SWC for switched and special access in another EC's study area, the EC will bill:
  - The special access facility from the end user premises to the distant SWC as a channel termination
  - Channel mileage termination and its portion of channel mileage facility based on the meet point billing agreements listed in NECA Tariff FCC No. 4 for the special access SWC
  - Based on its own tariff rates

Special access considerations

- The switch provider will bill the following:
  - The other channel termination
  - One channel mileage termination
  - Its portion of the channel mileage facility, based on meet point billing agreements listed in NECA Tariff FCC No. 4

Special access considerations

- EC may consider establishing a special access only SWC within its study area for non-DSL special access services
  - To designate a location as special access only SWC the EC must make the following changes/updates in NECA Tariff FCC No. 4
    - Remove all switched access office type codes, associated billing percentages and NPA-NXX(s) from the special access only SWC
    - Obtain concurrence for elimination of switched access meet-point billed routes associated with the SWC
    - Enter office type code UD to the special access only SWC and identify available special access capabilities with applicable office type codes

DSL considerations

- As required by NECA Tariff FCC No. 5, voice-data DSL and CBOL service must be provisioned from a DSL SWC
  - A DSL SWC must be located at a SWC from which the telephone company provisions local exchange service
  - DSL services may not be offered from a special access only SWC
  - DSL SWC and access service connection point may be located within the EC's study area or in another study area within the same LATA

DSL considerations

- If EC elects to remove all switches from its study area and establish a new SWC for switched and special access (including DSL) in another EC’s study area within the same LATA, EC will bill:
  - DSL access service from the end user premises to the distant DSL ASCP SWC as a DSL line charge
  - Based on its own DSL tariff rates
- Distant EC will provide and bill for the tariffed interconnection services used to connect to the ISP’s CDP to the DSL ASCP

DSL considerations

- If the ISP's CDP is located within the EC's study area, but the EC's voice switch, DSL SWC and DSL ASCP SWC are located in another EC's study area, then the EC must:
  - Establish a special access only SWC within its study area and jointly provide and bill special access
  - Continue to bill for the DSL access service from the end user premises to the distant DSL ASCP SWC as a DSL line charge, based on its own tariff rates
- The EC and the distant EC will jointly provide and bill for the tariffed interconnection services used to connect the ISP's CDP to the distant DSL ASCP SWC (special access)

NECA

Cloud switching considerations
What is cloud and hosted switching?

- Cloud switching – providing voice communications where some or all voice switching functionality is provided by a third party
  - Typically accessed via private or public IP networks (e.g., the internet)
  - Often bundled with call termination services
- For this presentation, cloud switching also refers to the use of a neighboring LEC's switch via interoffice transport

Cloud switching considerations
Benefits

- Allows an incumbent local exchange carrier to avoid the capital investment required to set up a full standalone softswitch in their own central office
  - Arrangements are typically based on a lease or service agreement
- Allows an ILEC to avoid ongoing switch upgrades and updates
  - Reduces reliance on internal staff to maintain a switch
- May quickly resolve switch end-of-life issues

Cloud switching considerations
EC requirements

- NECA Tariff FCC No. 5 permits an ILEC to provide local switching using its own switch or by obtaining switching functionality from another entity within the same local access transport area as the end user being served
  - In some cases, switch controller functionality can be obtained from a third party located outside of the LATA
  - The LATA requirement does not apply to nonregulated interconnected VoIP
- The ILEC must be able to measure its traffic and bill end office charges
- The ILEC must update LERG and NECA Tariff FCC No. 4

Cloud switching considerations
EC requirements

- Cost companies must review and update categorization to reflect the current use for cost study and USF purposes
- Switched access billing changes may be required
- Advance notification
- The ILEC must continue to meet all state and federal requirements

Cloud switching considerations
Using cloud-based switch controller functionality

- Collocated equipment (e.g., a media gateway) can be combined with distant cloud-based controller functionality to provision an end office softswitch
  - Line termination, trunk termination and routing functions must be physically collocated to properly interface with trunks and lines
  - There is no such reliance for the controller functionality
    - Controller functionality is not required to be located within the same LATA
- Media gateways generally provide line gateway, trunk gateway, router and signaling gateway functionality and need to be located in the LATA
  - Media gateways are typically far cheaper than a full end office softswitch
- This arrangement must not affect call routing and should be transparent to the access customer

Cloud switching considerations
Interconnected VoIP options

- Interconnected VoIP – a type of VoIP service that enables users to make and receive calls to and from traditional landline and mobile phone users
  - Enables real-time, two-way voice communications*
  - Requires a broadband connection from the user's location*
  - Requires Internet Protocol-compatible customer premises equipment*
  - Permits users generally to receive calls that originate on the PSTN and to terminate calls to the PSTN
- Any interconnected VoIP traffic must be integrated with broadband data traffic from the end user location to the internet service provider's CDP
  - Traffic routing decisions may not occur until after the traffic reaches the ISP

*Per 47 CFR § 9.3

Cloud switching considerations
Interconnected VoIP options

- Subscriber line charges, access recovery charges and other switched access charges do not apply to the ILEC providing the broadband connection
- Nonregulated allocations
  - When the cloud switch is used solely to provision nonregulated interconnected VoIP, associated lease expenses are treated as nonregulated
  - When the loop is used solely to provision interconnected VoIP service (with no associated CBOL), loop investment and costs are treated as nonregulated
    - Loops with CBOL remain regulated if the CBOL service is offered under tariff or common carrier permissive detariffing
  - Optical network terminals used to provide both CPE and transport require a nonregulated allocation

Summary

- Meet with industry staff and industry contacts (e.g., NECA member services, consultants) to discuss potential impacts
- ILEC must continue to meet state and federal requirements
- Advance notification
- Database updates
- Review and update categorization and billing to reflect current use of the facilities
- Consider the present and potential future regulatory, cost recovery, sources of revenue impacts in network reconfiguration decisions

Summary

- NECA reporting guidelines, papers and FAQs
  - 8.15 Switch Consolidation
  - 4.22 Soft Switch Technology
  - Switch Consolidation Reporting Guideline FAQ
  - Double Recovery FAQ
  - Cost Changes Requiring Action to Avoid Double Recovery

www.neca.org > Member Services > Reporting Guidelines, Papers and FAQs (login required) thank you!

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Acronyms

ARC	Access Recovery Charge
ASCP	Access Service Connection Point
CAF ICC	Connect America Fund Intercarrier Compensation
CDP	Customer Designated Premises
CPCN	Certificate of Public Convenience and Necessity
CPE	Customer Premises Equipment
C-SWC	Customer Serving Wire Center
DSL	Digital Subscriber Line
DT	Direct Trunk
DTF	Direct Trunk Facility
DTT	Direct Trunk Termination
EC	Exchange Carrier
FAQ	Frequently Asked Questions

Acronyms

- FCC Federal Communications Commission
- IC-SWC Interexchange Carrier Serving Wire Center
- ILEC Incumbent Local Exchange Carrier
- IP Internet Protocol
- IS Information Surcharge
- ISP Internet Service Provider
- IXC Interexchange Carrier
- LATA Local Access Transport Area
- LERG Local Exchange Routing Guide
- LS Local Switching
- NECA National Exchange Carrier Association
- NPA Numbering Plan Area
- NXX Three-digit Central Office Prefix

Acronyms

- PUC Public Utilities Commission
- RAO Responsible Accounting Officer
- SLC Subscriber Line Charge
- SPA Special Access
- SWA Switched Access
- SWC Serving Wire Center
- TS Tandem Switching
- TSF Tandem Switched Facility
- TST Tandem Switched Transport
- USF Universal Service Fund
- USAC Universal Service Administration Company
- VoIP Voice over Internet Protocol