



# NGTL Restriction Protocol 101

Educational Material



# Agenda

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- ① Guiding principles
- ② Local and broad area restrictions
- ③ Conceptual assessment process for broad area restrictions
- ④ Outage management in typical broad area restriction scenarios
- ⑤ NGTL - a complex and evolving system
- ⑥ Operations communications

# Guiding Principles for System Operations

## System managed in accordance with NGTL guiding principles:

1. **Prioritize** availability of **firm service** – reduce IT availability first reducing flow to align with system capability
2. **Optimize throughput** – maximize system capability without incremental impact to FT availability



## Managing system constraints

- Outages are **necessary** to facilitate **safe execution of maintenance** program to ensure **safety and reliability** of the system
- When restrictions are required, NGTL **consistently applies** the guiding principles to manage system flow and align the flow with throughput capability at the constraint
- Each system constraint is **unique and assessed specifically** based on the location and facilities involved in the outage, system load factor, linepack, supply and demand distribution, and other applicable factors
- The same facility outage at **different times** may result in **different restrictions** (services, areas, magnitude or duration)

# Local and Broad Area Restrictions: Definitions

## Restriction

A reduction in service for a period of time in order to reduce flow through a constraint as part of maintaining safe operations

## Local Area Restriction

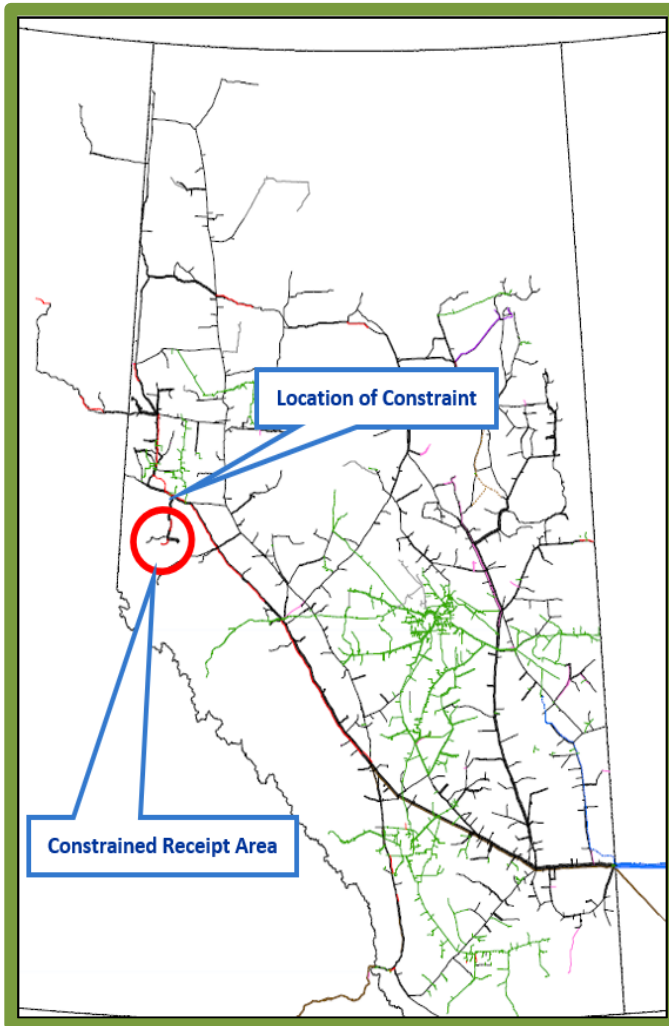
Restrictions which are imposed on services relying on a narrow set of facilities that can impact flows through a constraint (e.g., receipt or deliveries on a lateral on which maintenance is performed)

## Broad Area Restriction

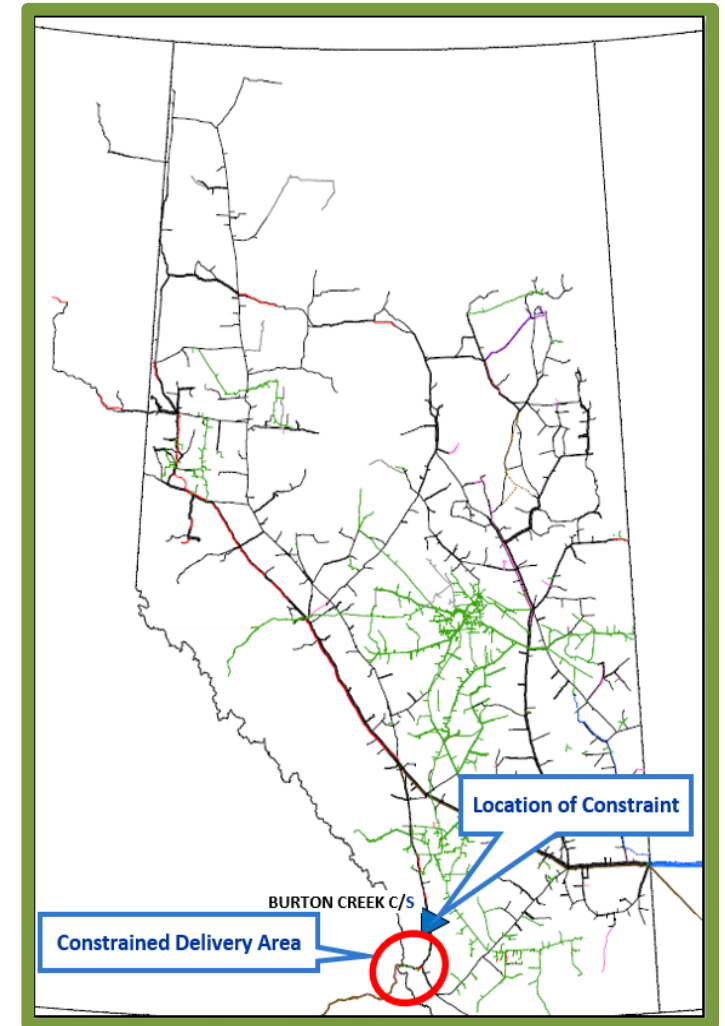
Restrictions which are imposed on services located in large upstream and/or downstream areas that impact flows through a constraint (e.g., maintenance on a compressor station located downstream of a broad area of receipt and upstream of a broad area of deliveries)



# Examples of Local Area Restrictions

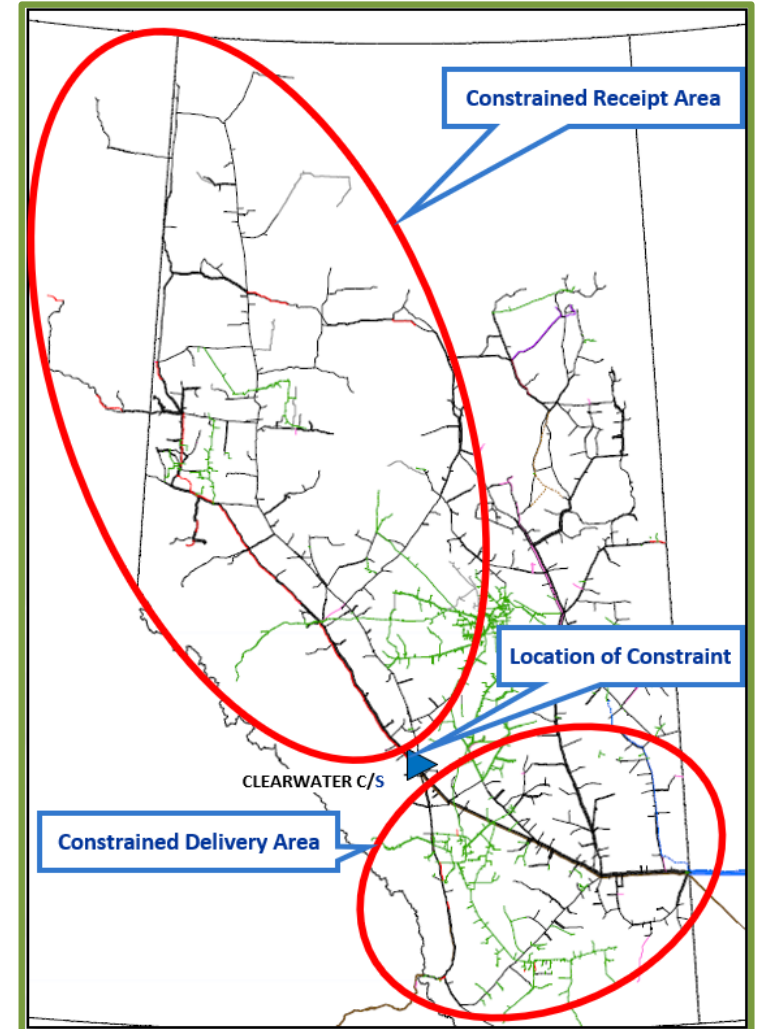


- Local area restrictions may impact a local receipt or delivery area
- Impact area would typically be upstream of a local receipt area constraint or downstream of a local delivery area constraint
- Restrictions outside of impacted area are not effective to manage the flow through the constraint
- Guiding principles will be applied to the impacted area
- Restriction will be applied to IT first and then FT if needed within the impacted area



# Example of a Broad Area Restriction

- The constraint substantially impacts the overall system throughput through the constraint
- Both receipt and delivery services contribute to system flow through the constraint and may potentially be reduced
- Restrictions on upstream receipt services and downstream delivery services can effectively contribute to manage flow to align with capability at the constraint
- The guiding principles are applied to both upstream receipt services and downstream delivery services to determine the appropriate restrictions
- The restrictions may be on upstream and downstream services



# Broad Area Restriction | Base Case Scenario - No Restrictions

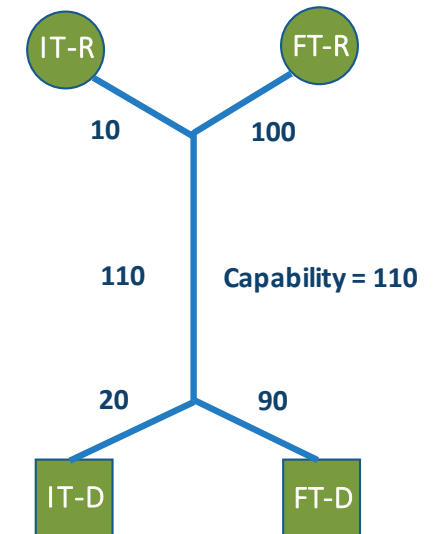
- Slides 9 to 13 depict a set of highly simplified diagrams to conceptually demonstrate the typical assessment process for broad area restrictions
- The purpose of restrictions is to reduce the flow to the capability at the constraint
- The base case represents normal operations without any restriction

## Note:

- IT-R includes receipt IT-S and IT-D includes delivery IT-S
- Simplified examples on slides 9 to 13 illustrate impact of operational capability only. They represent specific selected flow scenarios.

## Base case

- All facilities available
- No restrictions
- Capability 110



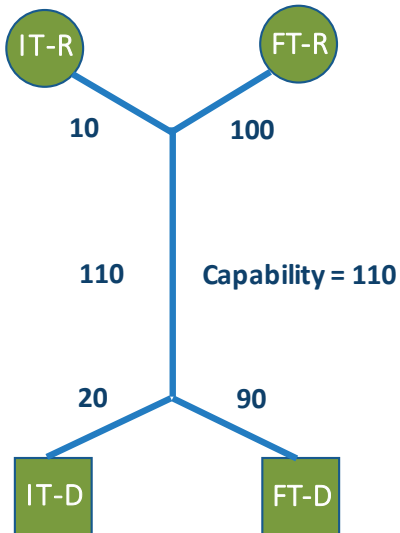
100% FT-R, 100% IT-R

100% FT-D, 100% IT-D

# Broad Area Restriction | Scenario A – Only upstream IT-R restriction required

## Base case

- All facilities available
- No restrictions
- Capability 110

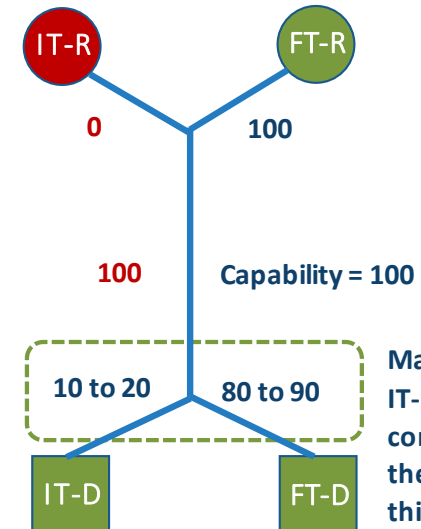


100% FT-R, 100% IT-R  
100% FT-D, 100% IT-D

Outage reduces system  
capability through constraint to  
100

## Scenario A

- Only upstream IT-R restriction is required



100% FT-R, 0% IT-R  
100% FT-D, 100% IT-D

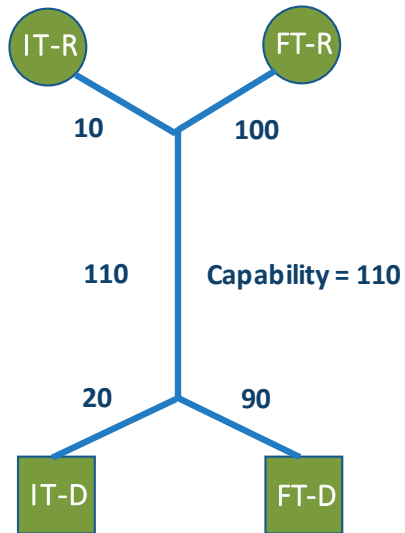
Market drives split between IT-D & FT-D. Split can be any combination that adds up to the capability number. In this case, 100.



# Broad area restriction | Scenario B – upstream IT-R & downstream IT-D restriction required

## Base case

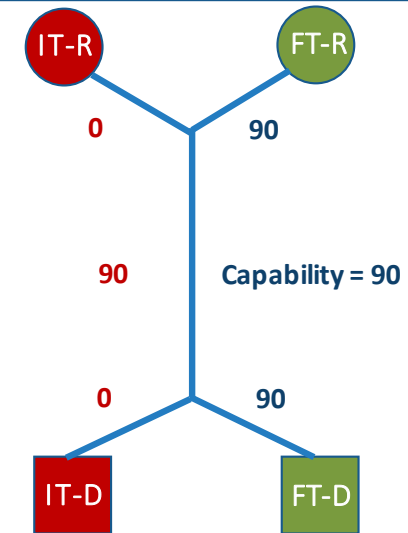
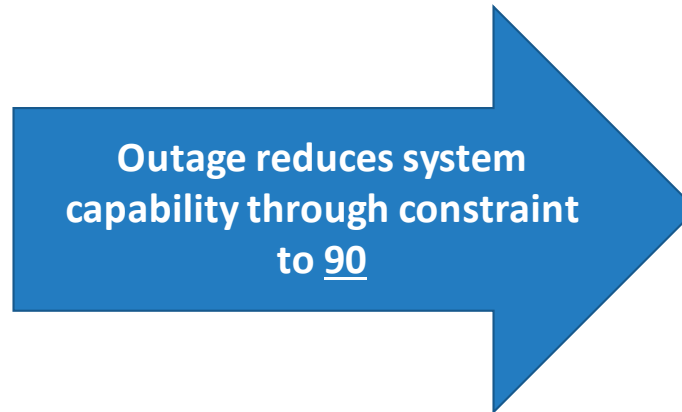
- All facilities available
- No restrictions
- Capability 110



100% FT-R, 100% IT-R  
100% FT-D, 100% IT-D

## Scenario B

- Upstream IT-R restriction alone is not sufficient
- Adding downstream IT-D restriction is sufficient to reduce flow to align with the capability at the constraint
- Upstream IT-R & downstream IT-D restriction required
- While FT-R is not restricted, it can only flow 90 limited by daily supply demand balancing

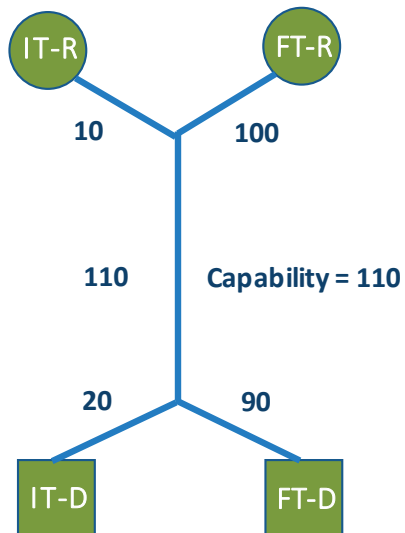


100% FT-R, 0% IT-R  
100% FT-D, 0% IT-D

# Broad area restriction | Scenario C – FT restriction required

## Base case

- All facilities available
- No restrictions
- Capability 110



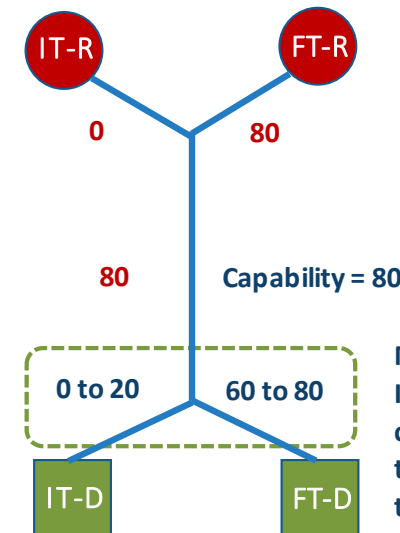
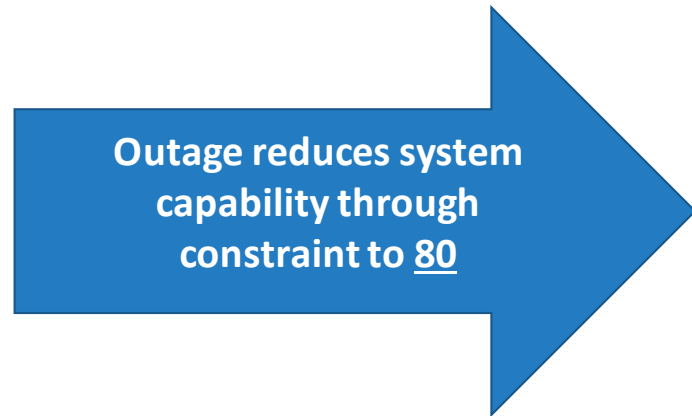
100% FT-R, 100% IT-R

100% FT-D, 100% IT-D

For informational purposes only

## Scenario C

- Upstream FT-R restriction is only applicable when IT restriction is insufficient
- Upstream IT-R restriction remains in effect to minimize impact to FT-R

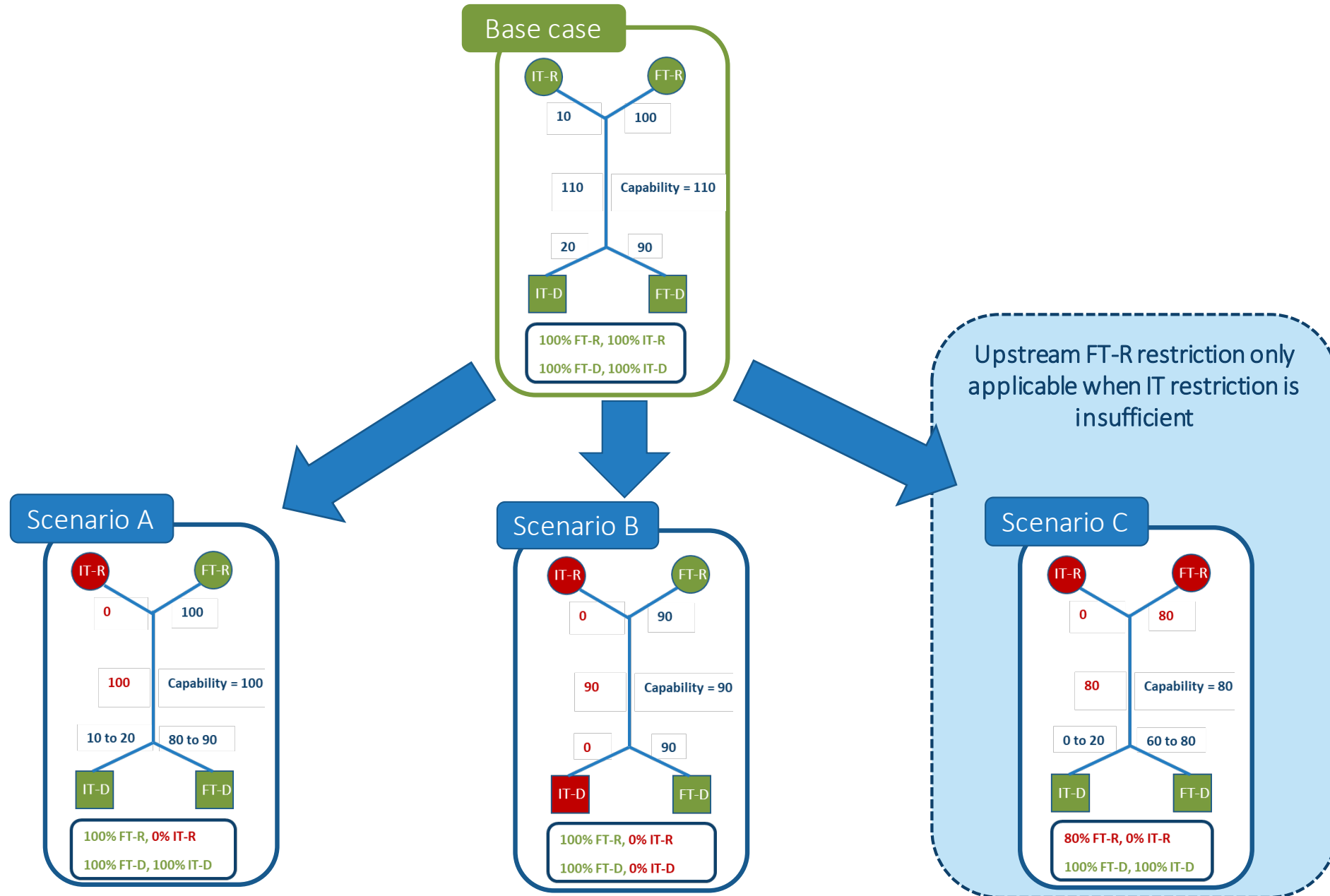


Market drives split between IT-D & FT-D. Split can be any combination that adds up to the capability number. In this case, 80.

80% FT-R, 0% IT-R

100% FT-D, 100% IT-D

# Broad area restriction | Summary of simplified scenarios



# Broad area Restriction | Assessment Process

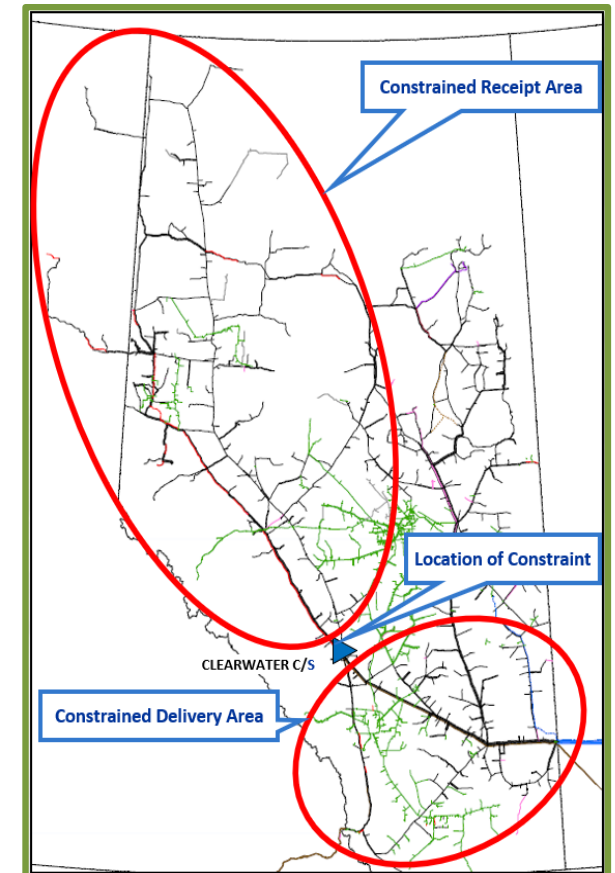
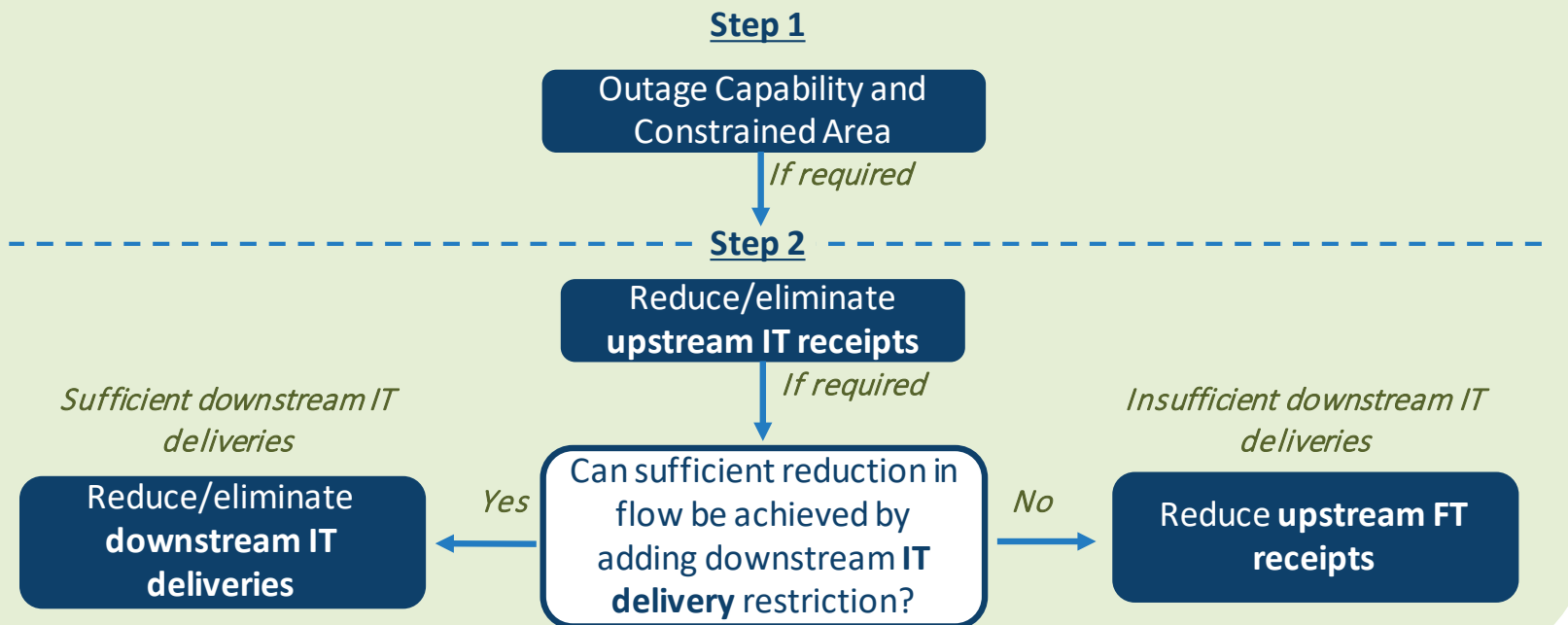
## Step 1 - Outage Assessment

- Constrained area is determined based on hydraulic analysis
- Restriction is required if flow is expected to exceed capability in the constrained area

## Step 2 – Restriction assessment process for supply constrained outage

- Applicable under the current system operations
- Applicable to broad area restrictions for most of outages in USJR

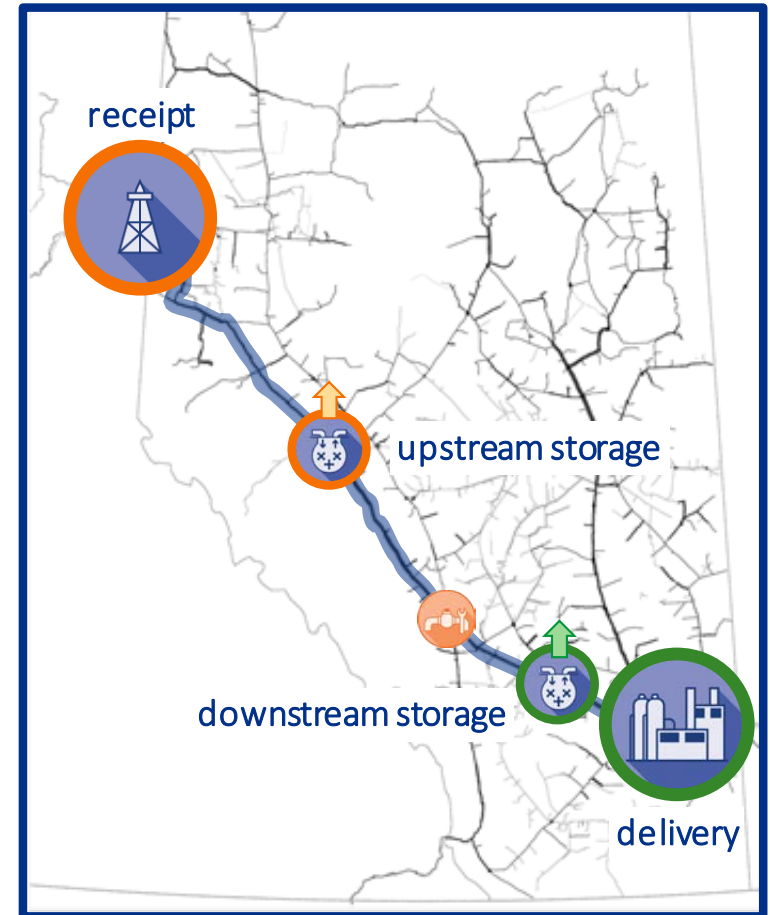
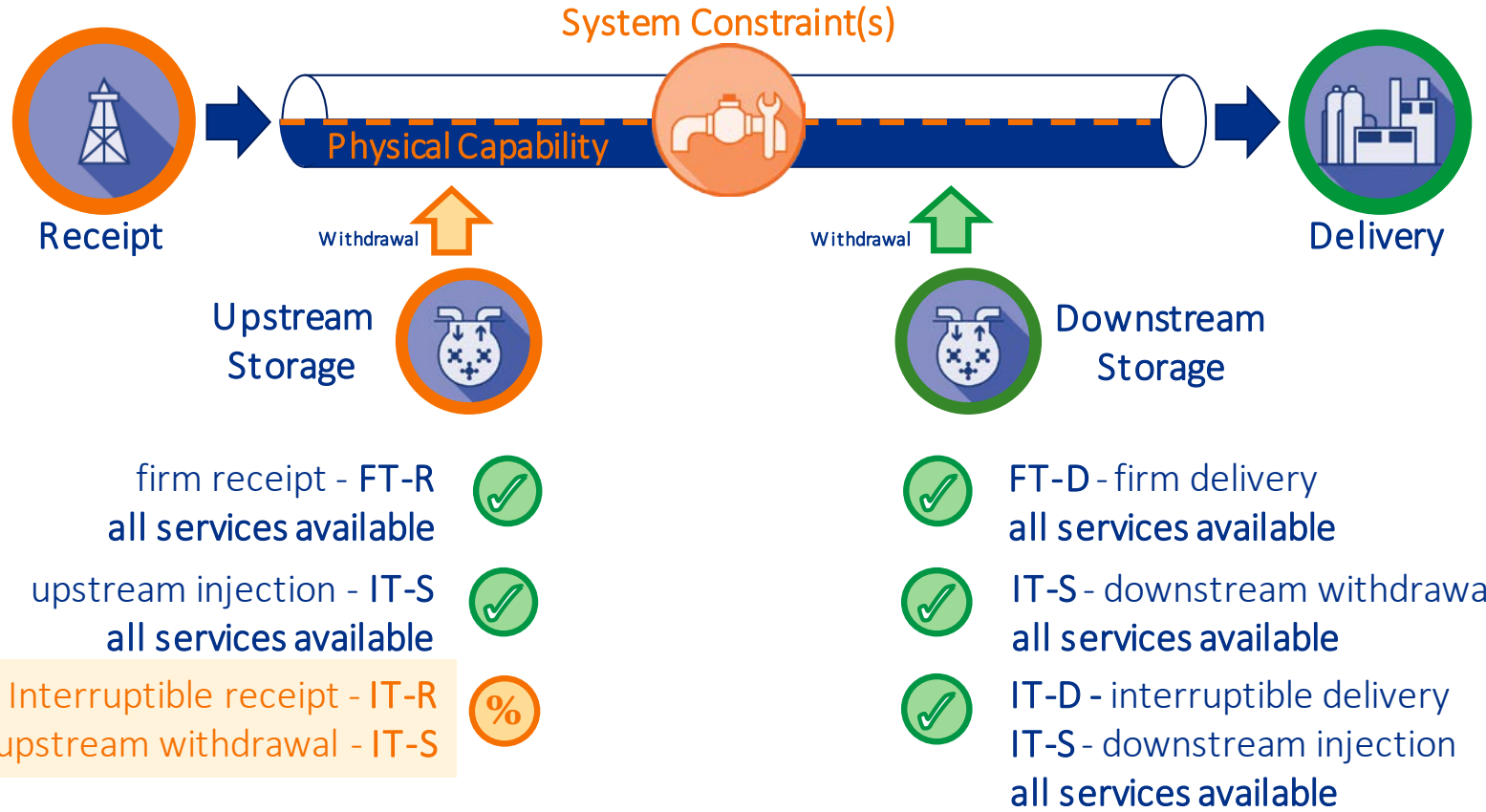
### Assessment process - Flow chart



# Outage Management | Scenario A – Only upstream IT-R restriction required

-  Guiding Principle
-  Linepack at Target
-  Supply Demand in Balance

**A** Restricting interruptible receipt service availability - typical during periods of upstream and downstream storage withdrawal






Restricting upstream IT-R is sufficient to reduce flow to align with capability at the constraint

\*Actual service authorizations will depend on several factors

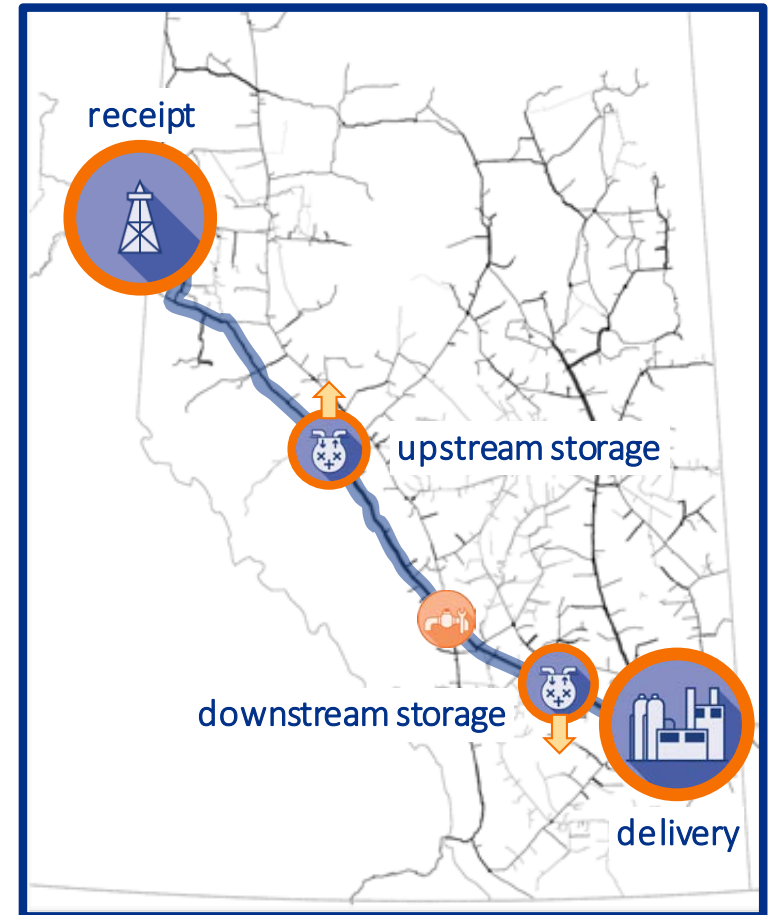
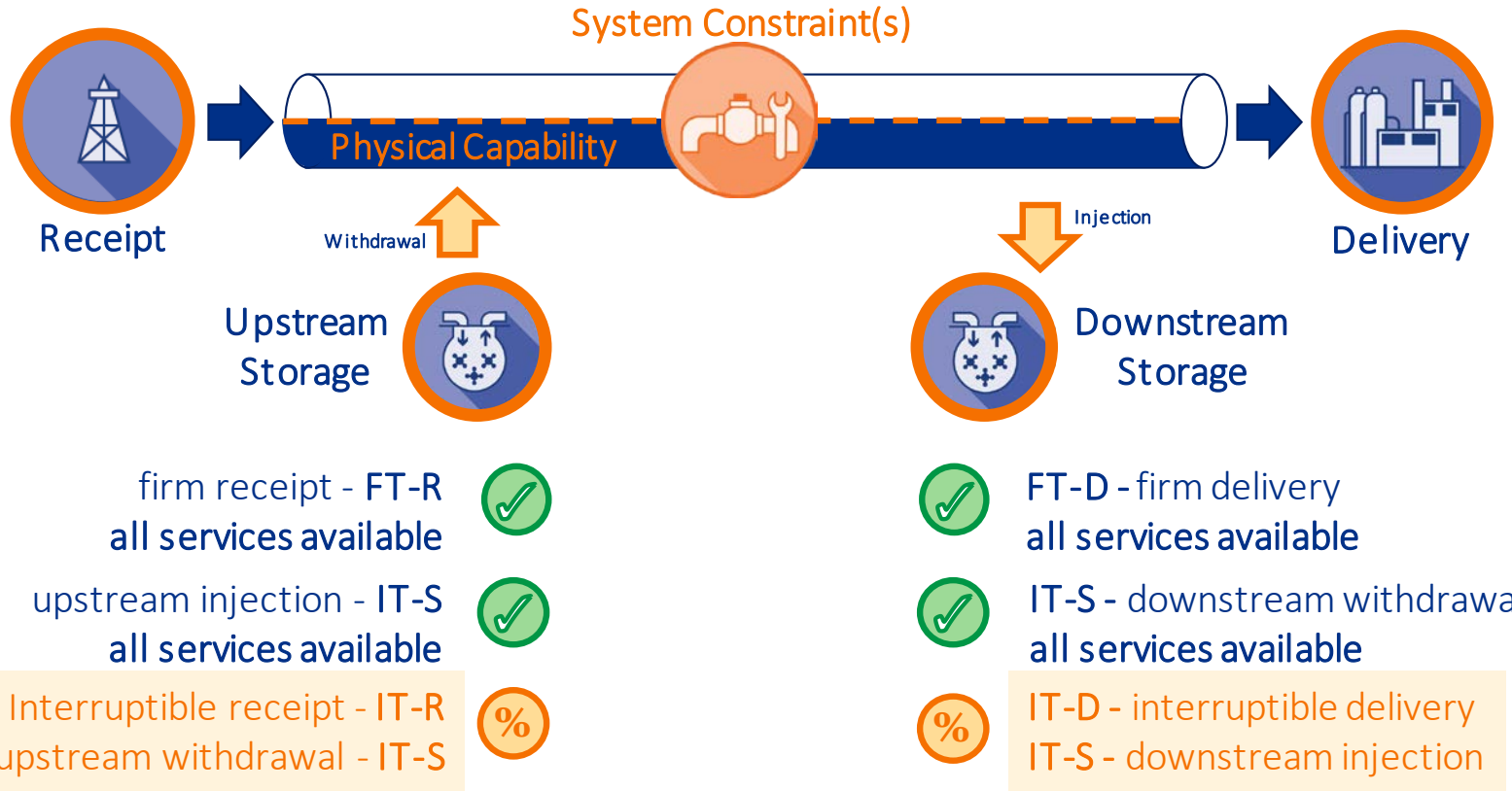
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# Outage Management | Scenario B – Upstream IT-R & downstream IT-D restriction required

-  Guiding Principle
-  Linepack at Target
-  Supply Demand in Balance




**B** Preservation of firm receipt service availability – typical during periods of downstream storage injection



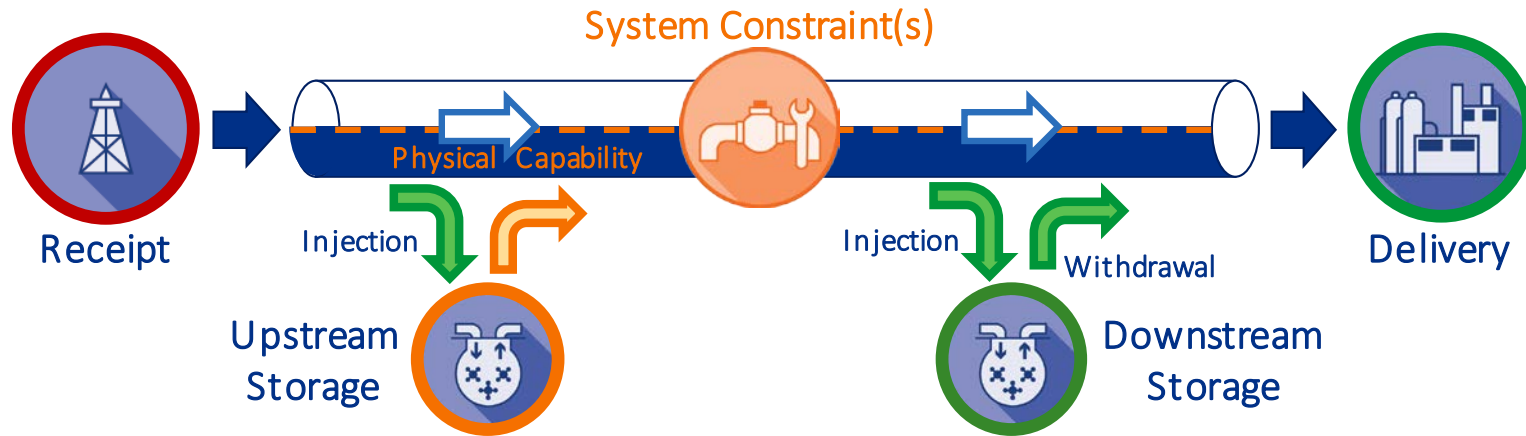
Restricting upstream IT-R and downstream IT-D is sufficient to reduce the flow to align with capability at the constraint





\*Actual service authorizations will depend on several factors

# Outage Management | Scenario C – FT restriction required

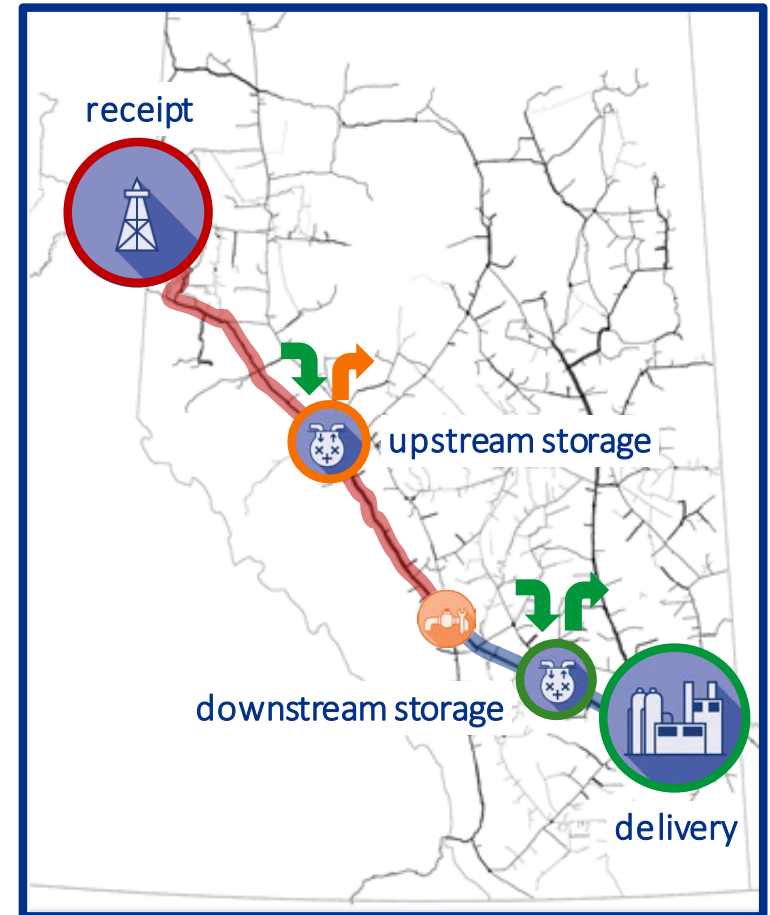
-  Guiding Principle
-  Linepack at Target
-  Supply Demand in Balance

**C** Firm receipt service availability reduced - required when flow reduction through limitation of IT is insufficient



- firm receipt - FT-R  reduced availability
- upstream injection - IT-S  all services available
- interruptible receipt - IT-R 
- upstream withdrawal - IT-S 

-  FT-D - firm delivery all services available
-  IT-S - downstream withdrawal all services available
-  IT-D - interruptible delivery IT-S - downstream injection all services available



Restricting IT is not sufficient and additional restriction on FT is necessary to reduce the flow to align with capability at the constraint

\*Actual service authorizations will depend on several factors

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# A Complex and Evolving System

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NGTL is a **complex** and **dynamic** system with **multi-flow paths**. The restriction scenarios described above are intended to represent typical scenarios.

- Each outage is **unique** and its impact is assessed based on the specifics of the outage and operation condition at the time
- Other scenarios may drive **different combinations** of restrictions compared to scenarios included in this presentation
- The required restriction(s) are determined **consistently** based on the guiding principles



NGTL system continues to **expand** and **evolve**. The supply and demand distributions continue to change. As a result, the system **bottleneck will shift**

- Restrictions are influenced by the system **bottleneck** in addition to the operational factors such as supply and demand distribution at that time
- The restrictions required for an outage in the future may not be the same as the restrictions today for the same facility outage

# Operational Communications

## ***Long Term Outage Plan (Q3/Q4)***

- Developed and communicated annually for known maintenance activity
- Longer lead time results in uncertainty

## ***Daily Operating Plan***

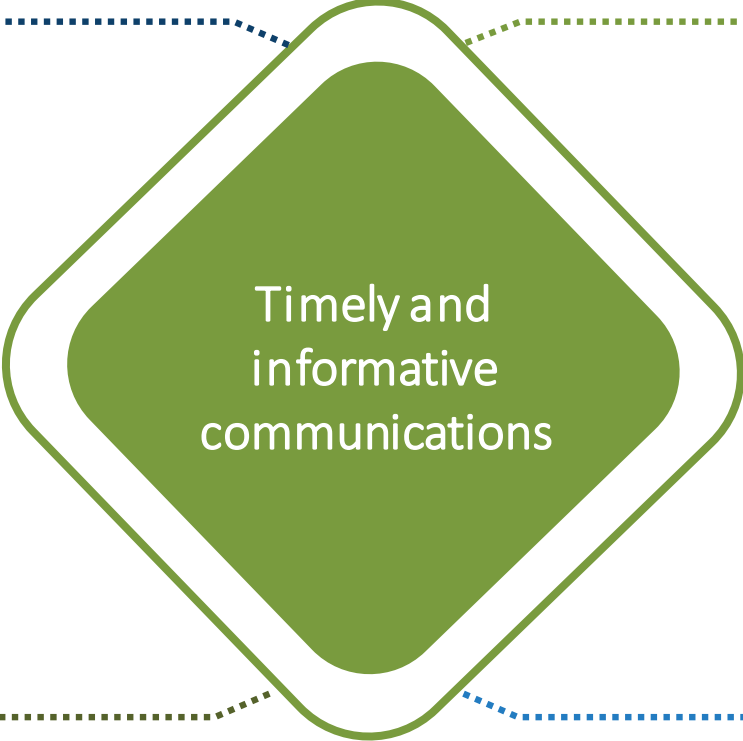
- Provides outage information - updated each business day
- New DOP tool to improve communication & customer experience

## ***Monthly Customer Operations meetings***

- Provide context on upcoming outages
- Q&A to improve customer understanding of operational topics

## ***Bulletins***

- Changes to service allowable communicated via bulletins
- Early notice of unplanned events that may affect firm service availability communicated via 'Advisory Bulletins'



Timely and  
informative  
communications

NGTL is committed to continuously improve its timely and informative communication practices to minimize impact to customers

# Daily Operating Plan (DOP)

## DOP terminology

**No impact to FT**

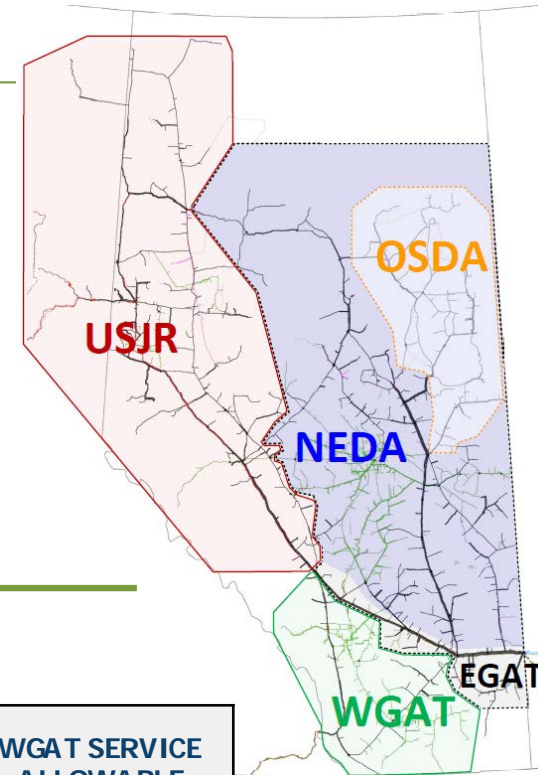
Refers to outage periods where FT impact is not expected

**Potential impact to FT**

Refers to outage periods where there is potential of FT impact

**Partial impact to FT**

Refers to outage periods where FT impact is expected



## Broad Area Outage in DOP

Outage Description	Start	End	Outage Impact (10 <sup>6</sup> m <sup>3</sup> /d)	Facility Location	USJR SERVICE ALLOWABLE	EGAT SERVICE ALLOWABLE	WGAT SERVICE ALLOWABLE
Berland River - Compressor Station Maintenance	9-Aug-21	11-Aug-21	16	USJR	Potential impact to FT-R USJR	No impact to FT-D anticipated	No impact to FT-D anticipated

## Local Area Outage in DOP

Outage Description	Start	End	Outage Impact (10 <sup>6</sup> m <sup>3</sup> /d)	Facility Location	USJR SERVICE ALLOWABLE	EGAT SERVICE ALLOWABLE	WGAT SERVICE ALLOWABLE
Winchell Lake - Compressor Station Maintenance	3-Aug-21	7-Aug-21	15	WGAT	N/A	N/A	Potential impact to FT-D WGAT



# Continuous Improvement

## Customer Collaboration

### Customer Operations Action Team (COAT)

- 13 Enhancements (DOP, Bulletins, Customer Express)
- 550+ individual lines of feedback
- 370+ total customer hours

### Big Bets

- 1 product, 1 retirement (NrG Bulletin)
- 90+ total customer hours



Committed to listening + continuous improvement

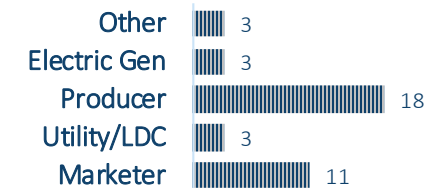
### Customer Feedback: Improvements to Outage Planning



69%

Respondents feel they can better forecast + plan for maintenance on NGTL

### Respondents



# Contact

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