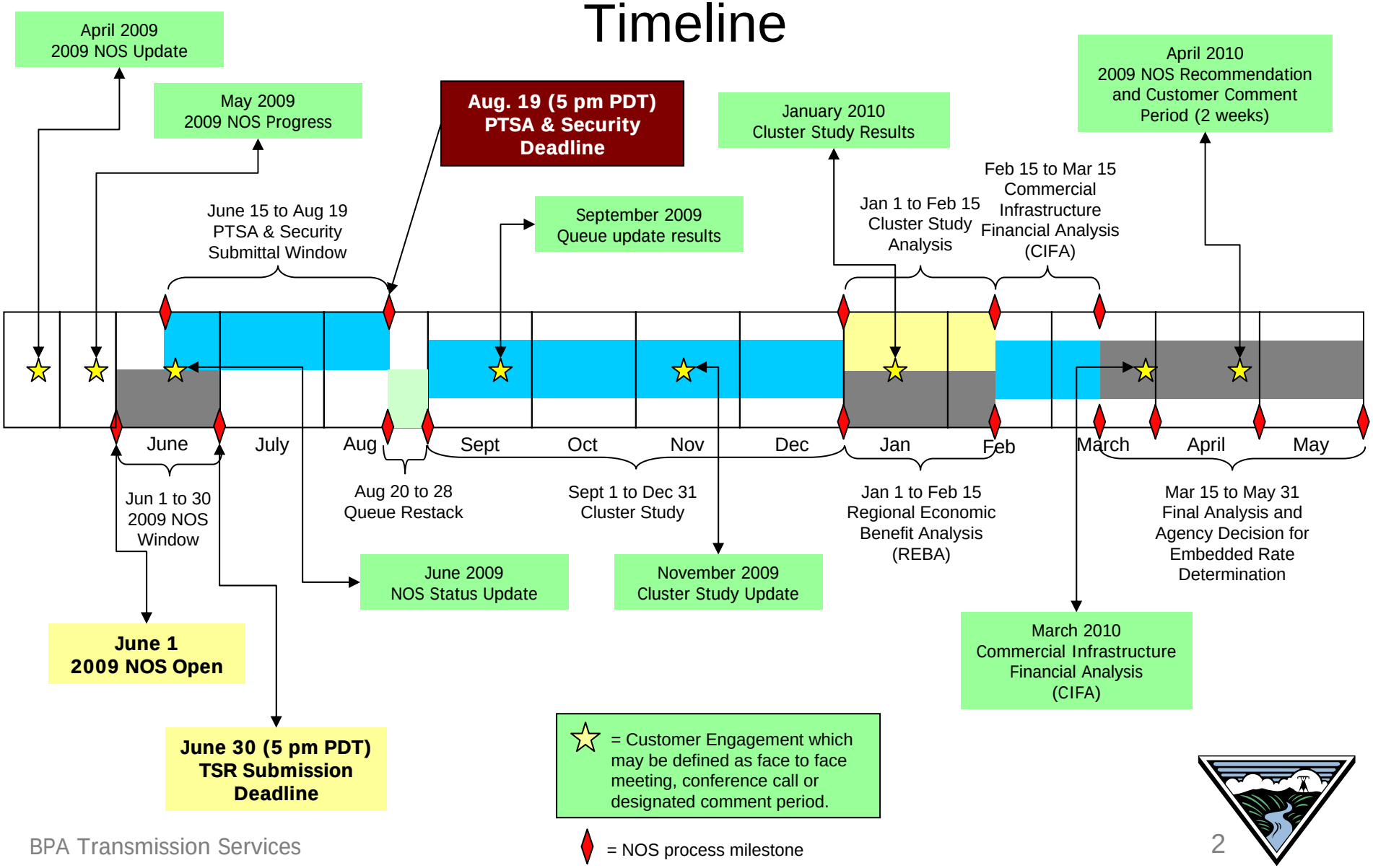
Network Open Season Cluster Study

Posted for discussion at the

Network Open Season Customer Meeting

January 19, 2010

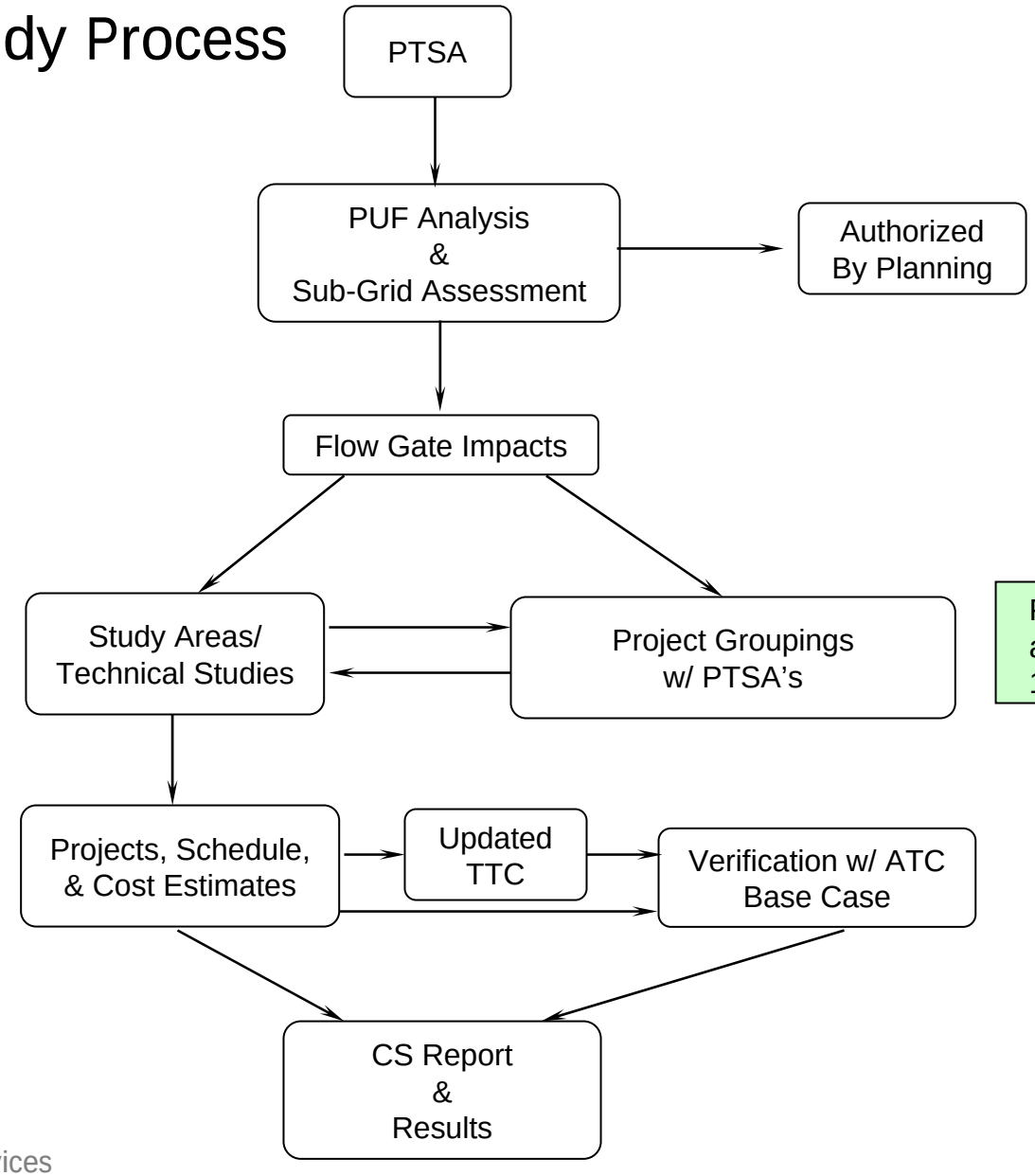
2009 Network Open Season Roadmap & Timeline



Initial NOS Pending Queue Summary

	Non De Minimis Impacts		
Flowgate	**# of PTSA's**	**Associated Demand**	**Flowgate Impact**
South of Allston	8 PTSA's	433 MW	140 MW
Cross Cascades North	17 PTSA's	711 MW	279 MW
Cross Cascades South	18 PTSA's	899 MW	264 MW
Monroe-Echo Lake	1 PTSA's	25 MW	3 MW
North of Hanford	4 PTSA's	231 MW	89 MW
North of John Day	3 PTSA's	201 MW	110 MW
Paul to Allston	6 PTSA's	333 MW	51 MW
Raver to Paul	6 PTSA's	333 MW	39 MW
West of McNary	7 PTSA's	415 MW	200 MW
West of Slatt	10 PTSA's	603 MW	249 MW

Cluster Study Process



Total PTSA demand: 1,553 MW

Authorized PTSA that do not require a build: 293 MW

PTSAs requiring additional reinforcement: 1,260 MW

Total PTSAs of 1,553 MW verified in out-year ATC base case

Cluster Study Methodology

- Determine which Precedent Transmission Service Agreements (PTSAs) could be met from existing system capability and which PTSAs required system reinforcement
  - PUF Analysis and Sub-Grid check
- Identify study areas for those PTSAs requiring system reinforcement
  - Perform technical studies to develop plans of service for the study areas
  - Determine TTC w/ reinforcement, cost, schedule and energization date
- Associate PTSAs with a project or group of projects
- Model all PTSAs in an out-year ATC base case and demonstrate that the interconnected transmission system, together with the required reinforcements, would be able to provide the requested service.

Projects/Study Areas

1. West of McNary Reinforcements – NOS 2008
2. I-5 Corridor Reinforcement – NOS 2008
3. Little Goose Area Reinforcement – NOS 2008
4. Northern Intertie Reinforcement
5. West of Garrison Reinforcement
6. Harney Area Reinforcement

Project Details – NOS 2008

- West of McNary Reinforcements
  - Group One:
    - McNary-John Day 500-kV (79 miles)
    - McNary-Ross 345-kV sag upgrade
    - Big Eddy-Ostrander 500-kV sag upgrade
    - John Day-Big Eddy 500 kV No. 2 reconductor
    - 230-kV shunt capacitor addition at Jones Canyon
    - RAS addition at McNary – McNary 500/230 kV transformer outage
  - Group Two:
    - New 500 kV Station (Knight)
    - Big Eddy – Knight 500-kV (28 miles)
- I-5 Corridor Reinforcement
  - New 500-kV Station near Castle Rock
  - New 500 kV Station -Troutdale 500-kV (70 miles)
- Little Goose Area Reinforcement
  - Central Ferry-Lower Monumental 500-KV (40 miles)

Project Details – NOS 2009

- Northern Intertie Reinforcement
  - Monroe-Echo Lake 500 kV No. 2 (33 miles)
- West of Garrison Reinforcement
  - Addition of series compensation station west of Garrison and west of Taft substations
- Harney Area Reinforcement
  - Harney-Summer Lake 500-kV (108 miles)

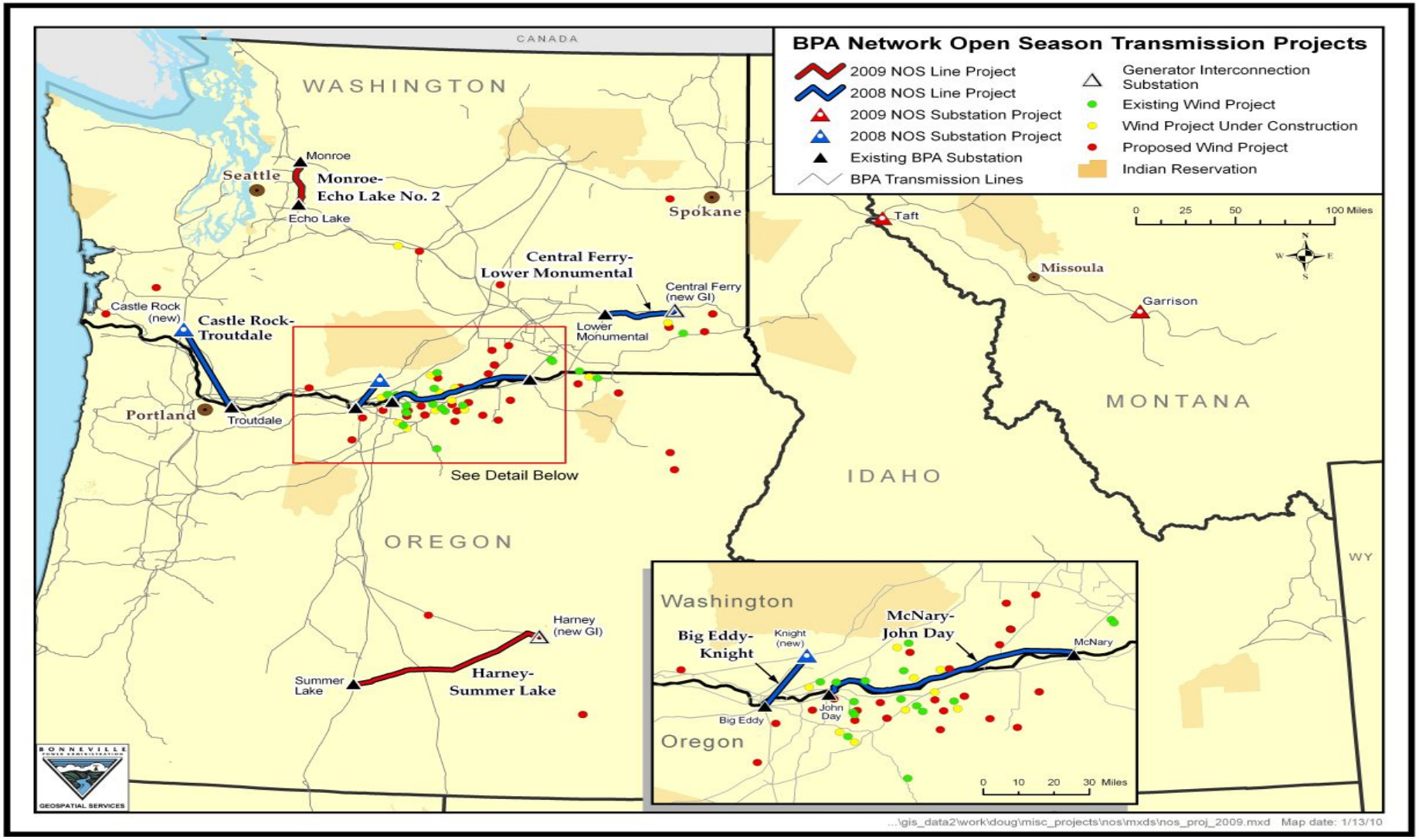
Project Cost and Schedule

Estimated Direct Costs Only (no overheads)

Project Description	Estimated Direct Cost ($M) / Confidence Level	Potential Energization Date
Northern Intertie	$225 /LOW	Sept. 2016
West of Garrison Reinforcement (BPA Share)	$91 /LOW	Sept. 2014
Harney Area Reinforcement	$242 /LOW	Sept. 2015
Total	$558	

Notes:

1.Estimated costs in FY09 dollars.
2.Energization dates assume embedded cost rate determination is made in May 2010.


BPA Network Open Season Transmission Projects
2009 NOS Line Project
2008 NOS Line Project
2009 NOS Substation Project
2008 NOS Substation Project
Existing BPA Substation
BPA Transmission Lines
Generator Interconnection Substation
Existing Wind Project
Wind Project Under Construction
Proposed Wind Project
Indian Reservation
CANADA
WASHINGTON
OREGON
IDAHO
MONTANA
WY
Seattle
Spokane
Portland
Monroe
Monroe-Echo Lake No. 2
Echo Lake
Central Ferry-Lower Monumental
Central Ferry (new GI)
Lower Monumental
Castle Rock (new)
Castle Rock-Troutdale
Troutdale
Taft
Missoula
Garrison
See Detail Below
Harney (new GI)
Harney-Summer Lake
Summer Lake
Washington
Oregon
Big Eddy-Knight
Knight (new)
Big Eddy
John Day
McNary-John Day
McNary
0 10 20 30 Miles
0 25 50 100 Miles
...\gis_data2\work\doug\misc_projects\nos\mxds\nos_proj_2009.mxd Map date: 1/13/10

Final PTSA Grouping

Grouping	PTSA's	Demand
Authorize	10 PTSA's	293 MW
Harney	1 PTSA's	25 MW
I-5	2 PTSA's	100 MW
I-5, MCNY-JDAY, BIGE-KNGT	1 PTSA's	125 MW
MCNY-JDAY, BIGE-KNGT	17 PTSA's	896 MW
Northern Intertie, CFRY-LOMO, & West of Garrison	2 PTSA's	100 MW
West of Garrison	1 PTSA's	14 MW
Total	34 PTSA's	1,553 MW

ATC Analysis with Proposed Projects

- 2014 ATC summer and winter base cases – modeled 1,553 MW of PTSAs
- ATC base case showed that with the facilities identified, BPA can provide long-term transmission service for all 34 PTSAs with an associated demand of 1,553 MW

2014 ATC Case Flows

		a14_ATC_NOS-09_start	a14_ATC_NOS-09_4	j14_ATC_NOS-09_start	j14_ATC_NOS-09_4
Flow gate	**TTC**	**Flow MW**	**Flow MW**	**Flow MW**	**Flow MW**
SOUTH OF ALLSTON	3,980	3,175	3,044	1,659	1,815
CROSS CASCADES NORTH	9,900	4,399	4,239	9,041	9,193
CROSS CASCADES SOUTH	7,700	4,794	4,909	6,758	6,734
MONROE-ECHO LAKE	1,500	1,258	1,148	-260	-307
NORTH OF HANFORD	4,100	2,225	1,592	-227	-38
NORTH OF JOHN DAY	8,400	6,631	5,787	4,579	4,858
PAUL TO ALLSTON	2,990	2,206	2,014	933	987
RAVER TO PAUL	1,625	1,093	935	655	696
WEST OF MCNARY	4,500	3,025	3,151	3,478	3,716
WEST OF SLATT	5,500	4,986	4,916	4,570	4,906

a14_ATC_NOS-09_start: August 2014 -- Starting ATC case for NOS 2009 w/NOS 2008 Infrastructure

a14_ATC_NOS-09_4: August 2014 -- ATC case w/ all NOS 2009 PTSA's

j14_ATC_NOS-09_start: January 2014 -- Starting ATC case for NOS 2009 w/NOS 2008 Infrastructure

j14_ATC_NOS-09_4: January 2014 -- ATC case w/ all NOS 2009 PTSA's

Next Steps

- Finalize 2009 NOS Cluster Study Report
- Support Marketing with CIFA, as required
- Based upon outcome of CIFA, continue to develop plan of service (POS), project requirements diagram (PRD), cost estimate, schedule, funding request, business case, etc.