Preliminary Results

2020 Summer/Spring/Fall Scenarios Key to Scenario Numbers

Scenario / Upgrade		NO UPGRADE	C3ET	Cottle-Tesla/ Tracy	Tesla/ Tracy-Cottle-Gregg	TANC (ZETA)	CNC	4TH 500KV from COI
SCN 1	A	X						
	B		X					
	C		X	X				
	D		X	X	X			
SCN 4	A	X						
	B		X			X		
SCN 6	A	X						
	B		X					
SCN 7	A	X						
	B		X					
	C		X	X				
	D		X	X	X			
SCN 8	A	X						
	B					X	X	
	C					X	X	
	D					X	X	X
SCN 10	A	X						
	B		X			X		

RIR – Review RIR Scenarios and Preliminary Transmission Solution Options

Scenario 1 - High Midway wind and solar with Geo
A. No upgrade
B. C3ET Project
C. C3ET Project + Cottle-Tesla/Tracy Project
D. C3ET Project + Cottle-Tesla/Tracy Project + Cottle-Gregg Project
Scenario 4 – Min COI and No Midway
A. No Upgrade
B. TANC (Zeta)+ C3ET Project
Scenario 6 - Even Distribution with Geo
A. No Upgrade
B. C3ET Project
Scenario 7 - High Midway wind and solar; Minimum Geo
A. No upgrade
B. C3ET Project
C. C3ET Project + Cottle-Tesla/Tracy Project
D. C3ET Project + Cottle-Tesla/Tracy Project + Cottle-Gregg Project
Scenario 8 - All COI
A. No upgrade
B. TANC(Zeta)
C. TANC(Zeta)+CNC
D. TANC(Zeta)+CNC+4th COI 500 kV
Scenario 10 - CAISO Interconnection Queue
A. No Upgrade
B. TANC (Zeta)+ C3ET Project

2020 Summer Peak N-0 Overloads

						% of MVA Limit (Rating A)																		
Line	From Name	Nom kV	To Name	Normal MVA Rating	% Overload Range	BASE	SCN 1				SCN 4		SCN 6		SCN 7				SCN 8				SCN 10	
							A	B	C	D	A	B	A	B	A	B	C	D	A	B	C	D	A	B
Line 6	MALIN	500	ROUND MT	1558.8	100 - 108	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x		x	x
Line 1	TABLE MT	500	VACA-DIX	2309.7	113 - 113														x					
Line 59	C.COSTA	230	LONETREE	295.6	108 - 116	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Line 10	CPVSTA	230	CORTINA	331	100 - 109	x									x	x	x	x	x	x				
Line 63	CR1T3_18	230	FULTON	658	100 - 101		x	x	x	x	x	x												
Line 49	FOLSOM	230	FOLSOM	250	112 - 126		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Line 19	LAKEVILE	230	T22_93	329	120 - 120						x	x												
Line 13	POE	230	RIO OSO	295.6	117 - 118																		x	x
Line 14	RIO OSO	230	ATLANTC	329	102 - 106														x	x	x	x		
Line 18	T22_93	230	FULTON	329	121 - 122						x	x												

Transformer

Transmission line

2020 Summer Peak N-1 Overloads

						% of MVA Limit (Rating B)																		
Line	From Name	Nom kV	To Name	Limit B MVA	% Overload Range	BASE	SCN 1				SCN 4		SCN 6		SCN 7				SCN 8				SCN 10	
							A	B	C	D	A	B	A	B	A	B	C	D	A	B	C	D	A	B
Line 6	MALIN	500	ROUND MT	2338.3	111 - 122	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Line 2	ROUND MT	500	TABLE MT	2840.5	110 - 117	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	
Line 1	TABLE MT	500	VACA-DIX	3464.1	107 - 107														X					
Line 3	TABLE MT	500	TESLA	3464.1	114 - 114														X					
Line 7	COTWD_E	230	ROUND MT	338.6	103 - 103														X					
Line 46	COTWDWAP	230	ROSEVILL	318.7	102 - 102														X					
Line 10	CPVSTA	230	CORTINA	380	105 - 118	X							X	X	X	X	X	X	X	X				
Line 23	EIGHT MI	230	TESLA E	389	104 - 115	X	X	X	X	X	X	X	X	X	X	X	X	X					X	
Line 49	FOLSOM	230	FOLSOM	250	112 - 126	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 48	FOLSOM	230	ORANGEVL	350	109 - 115	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 17	FULTON	230	IGNACIO	388.4	126 - 126						X	X												
Line 30	GREGG	230	FGRDN T2	338.6	109 - 109	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 33	HERNDON	230	FGRDN T1	339	109 - 109	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 19	LAKEVILE	230	T22_93	389	150 - 150						X	X												
Line 43	NATOMAS	230	HURLEY S	350.6	101 - 101	X							X	X	X	X	X	X	X	X	X	X	X	X
Line 13	POE	230	RIO OSO	338.6	103 - 104																		X	X
Line 56	PRKR MID	230	PARKER	338.6	101 - 102												X	X						
Line 42	PROCTER	230	HURLEY S	350.5	104 - 104															X	X	X		X
Line 14	RIO OSO	230	ATLANTC	429	108 - 114														X	X	X	X		
Line 20	STAGG-J2	230	TESLA E	389	103 - 113	X	X	X	X	X	X	X	X	X	X	X	X	X					X	
Line 29	STOREY 1	230	GREGG	316	103 - 132	X	X	X	X	X	X		X	X	X	X	X	X					X	
Line 28	STOREY 1	230	WILSON	339	102 - 110			X							X	X	X	X						
Line 18	T22_93	230	FULTON	389	153 - 153						X	X												
Line 55	TRCY PMP	230	HURLEY S	395	101 - 102										X	X	X	X						

Transformer

Transmission line

2020 Spring Peak N-0 Overloads

						% of MVA Limit (Rating A)																		
Line	From Name	Nom kV	To Name	Normal MVA Rating	% Overload Range	BASE	SCN 1				SCN 4		SCN 6		SCN 7				SCN 8				SCN 10	
							A	B	C	D	A	B	A	B	A	B	C	D	A	B	C	D	A	B
Line 6	MALIN	500	ROUND MT	1558.8	101 - 105			x	x	x		x			x	x	x	x						
Line 1	TABLE MT	500	VACA-DIX	2309.7	103 - 120														x		x			x
Line 14	RIO OSO	230	ATLANTC	329	100 - 109														x	x	x			
Line 10	CPVSTA	230	CORTINA	331	101 - 101														x					
Line 18	T22_93	230	FULTON	329	139 - 141						x	x												
Line 59	C.COSTA	230	LONETREE	295.6	102 - 112	x	x	x	x	x	x	x	x	x					x		x		x	x
Line 13	POE	230	RIO OSO	295.6	123 - 124																		x	x
Line 7	COTWD_E	230	ROUND MT	253	101 - 101														x					
Line 19	LAKEVILE	230	T22_93	329	139 - 140						x	x												

Transformer

Transmission line

2020 Spring Peak N-1 Overloads

Line	From Name	Nom kV	To Name	Limit B MVA	% Overload Range	% of MVA Limit (Rating B)																		
						BASE	SCN 1				SCN 4		SCN 6		SCN 7				SCN 8				SCN 10	
							A	B	C	D	A	B	A	B	A	B	C	D	A	B	C	D	A	B
Line 1	TABLE MT	500	VACA-DIX	3464.1	107 - 107														X					
Line 2	ROUND MT	500	TABLE MT	2840.5	104 - 118	x	x	x	x	x	X		x	x	x	x	x	x	x				x	
Line 6	MALIN	500	ROUND MT	2840.5	103 - 122	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
Line 7	COTWD_E	230	ROUND MT	338.6	113 - 125	x	x	x	x	x			X					x	x				x	
Line 8	COTWD_F	230	BRNY_FST	279.3	111 - 112														x	x	x	x		
Line 9	BRNY_FST	230	PIT 1	279.3	110 - 111														x	x	x	x		
Line 10	CPVSTA	230	CORTINA	380	100 - 100														x					
Line 11	PIT 3	230	ROUND MT	279.3	112 - 114														x	x	x	x		
Line 13	POE	230	RIO OSO	338.6	108 - 109																		x	x
Line 14	RIO OSO	230	ATLANTC	429	104 - 122														x	x	x	x		
Line 15	RIO OSO	230	GOLDHILL	429	100 - 112														x	x	x			
Line 16	ATLANTC	230	GOLDHILL	389	109 - 109														X					
Line 17	FULTON	230	IGNACIO	388.4	142 - 144						x	x												
Line 18	T22_93	230	FULTON	389	174 - 176						x	x												
Line 19	LAKEVILE	230	T22_93	389	173 - 174						x	x												
Line 22	C.COSTA	230	LS PSTAS	398	101 - 101																		X	
Line 28	STOREY 1	230	WILSON	339	103 - 106											x	x							
Line 29	STOREY 1	230	GREGG	316	103 - 125		x	x	x	x					x	x	x	x						
Line 45	COTWDWAP	230	ROUND MT	320	107 - 120	x	x	x	x	x			x					x	x				X	
Line 46	COTWDWAP	230	ROSEVILL	318.7	101 - 101								x	x										
Line 51	OLINDAW	230	COTWDWAP	418.3	100 - 106						X		x											

Transformer

Transmission line

2020 Fall Off-Peak N-0 Overloads

						% of MVA Limit (Rating A)																			
Line	From Name	Nom kV	To Name	Normal MVA Rating	% Overload Range	BASE	SCN 1				SCN 4		SCN 6		SCN 7				SCN 8				SCN 10	
							A	B	C	D	A	B	A	B	A	B	C	D	A	B	C	D	A	B
Line 5	GATES	500	MIDWAY	2309.7	102 - 168	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Line 27	PANOCHE	230	MCMULLN1	328.7	100 - 104	x	x						x		x				x	x	x	x	x	
Line 48	FOLSOM	230	ORANGEVL	302	100 - 122	x		x		x	x	x	x					x	x	x	x	x	x	x
Line 64	TESLA	500	LOSBANOS	1932	101 - 101										x									
Line 48	LOSBANOS	500	GATES	2309.7	108 - 131		x	x	x						x	x	x	x						
Line 18	T22_93	230	FULTON	329	139 - 140						x	x												
Line 19	LAKEVILE	230	T22_93	329	139 - 139						x	x												
Line 24	WESTLEY	230	LOSBANOS	591.2	100 - 101											x	x							
Line 31	MCMULLN1	230	KEARNEY	328.7	101 - 101		x								x									
Line 34	MC CALL	230	HENTAP2	328.7	107 - 113		x								x									
Line 39	GATES	230	MIDWAY	295.6	100 - 100										x									
Line 40	TEMPLETN	230	MORROBAY	328.7	105 - 116										x	x	x	x						
Line 47	FOLSOM	230	LAKE	302	103 - 109							x								x	x	x		x
Line 51	OLINDAW	230	OLINDA	850	102 - 113						x	x												
Line 27	PANOCHE	230	GATES	295.6	104 - 118		x								x	x	x							

Transformer

Transmission line

2020 Fall Off-Peak N-1 Overloads

Line	From Name	Nom kV	To Name	Limit B MVA	% Overload Range	% of MVA Limit (Rating B)																			
						BASE	SCN 1				SCN 4		SCN 6		SCN 7				SCN 8				SCN 10	
							A	B	C	D	A	B	A	B	A	B	C	D	A	B	C	D	A	B
Line 4	LOSBANOS	500	GATES	3464.1	106 - 117		X								X	X	X							
Line 39	GATES	500	MIDWAY	3464.1	100 - 142	X	X	X	X	X			X		X	X	X	X		X		X	X	
Line 6	MALIN	500	MALROU21	2338.3	103 - 103														X					
Line 7	COTWD_E	230	ROUND MT	338.6	100 - 116	X					X	X												
Line 12	ROUND MT	230	RD MT 1M	1260	101 - 113	X					X	X	X	X					X				X	
Line 17	FULTON	230	IGNACIO	388.4	132 - 133						X	X												
Line 18	T22_93	230	FULTON	389	167 - 167						X	X												
Line 19	LAKEVILE	230	T22_93	389	166 - 166						X	X												
Line 21	WARNERVL	230	WILSON	316	100 - 113								X						X	X	X	X	X	
Line 24	WESTLEY	230	LOSBANOS	677.2	112 - 127		X	X	X						X	X	X							
Line 25	LOSBANOS	230	L.BANS M	1005	102 - 102										X									
Line 26	PANOCHE	230	MCMULLN1	338.6	124 - 136	X	X				X		X		X				X	X	X	X	X	
Line 27	PANOCHE	230	GATES	338.6	103 - 150	X	X	X	X				X		X	X	X	X						
Line 31	MCMULLN1	230	KEARNEY	388.4	121 - 134	X	X				X		X		X				X	X	X	X	X	
Line 32	BULRD_EC	230	KEARNEY	389	113 - 127	X	X				X		X		X				X	X	X	X	X	
Line 34	MC CALL	230	HENTAP2	388.4	112 - 140	X	X				X		X		X				X	X	X	X	X	
Line 35	HENTAP1	230	GATES	732	100 - 110	X	X						X		X									
Line 36	GATES	230	TEMPLETN	388.4	108 - 108										X									
Line 37	GATES	230	MORROBAY	388.4	103 - 118										X	X	X	X						
Line 38	GATES	230	ARCO	375	102 - 109		X								X									
Line 39	GATES	230	MIDWAY	375	103 - 155	X	X	X	X		X		X		X	X	X	X	X	X	X	X	X	
Line 40	TEMPLETN	230	MORROBAY	388.4	107 - 137		X								X	X	X	X						
Line 41	ARCO	230	MIDWAY	375	106 - 133		X								X	X	X							
Line 44	AIRPORTW	230	COTWDWAP	318.7	133 - 143	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 45	COTWDWAP	230	ROUND MT	320	103 - 112						X	X												
Line 47	FOLSOM	230	LAKE	350	107 - 114							X								X	X	X		X
Line 48	FOLSOM	230	ORANGEVL	350	103 - 135	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 50	KESWICK	230	AIRPORTW	320	116 - 122	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 51	OLINDAW	230	OLINDA	1041	104 - 145	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 52	OLINDAW	230	COTWDWAP	418.3	100 - 129						X	X	X	X					X	X			X	X
Line 53	OLINDAW	230	KESWICK	420	121 - 125	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Line 54	ROSEVILL	230	FOLSOM	318.7	101 - 107							X								X	X	X		X

Transformer

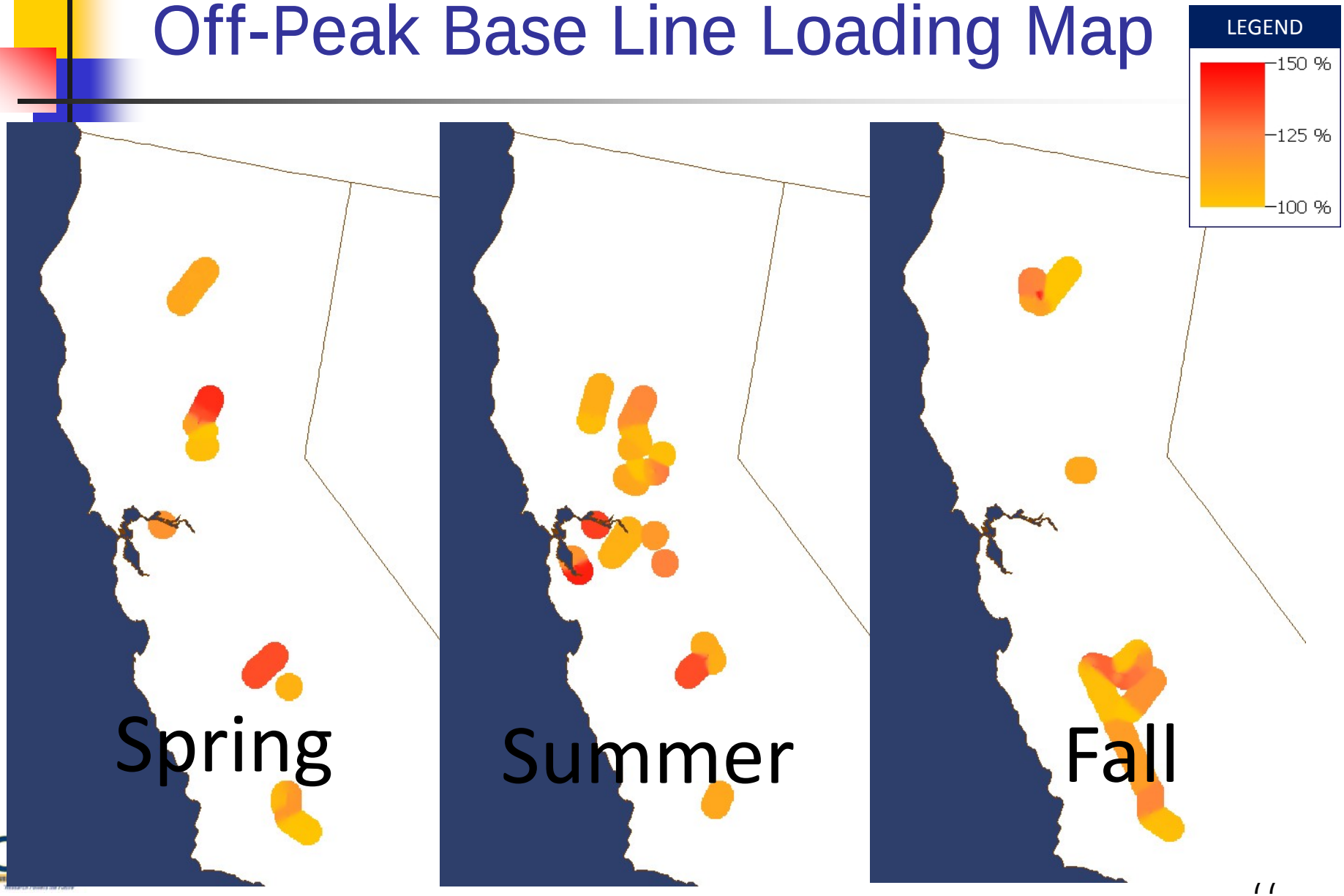
Transmission line

Index of Line Overload Maps

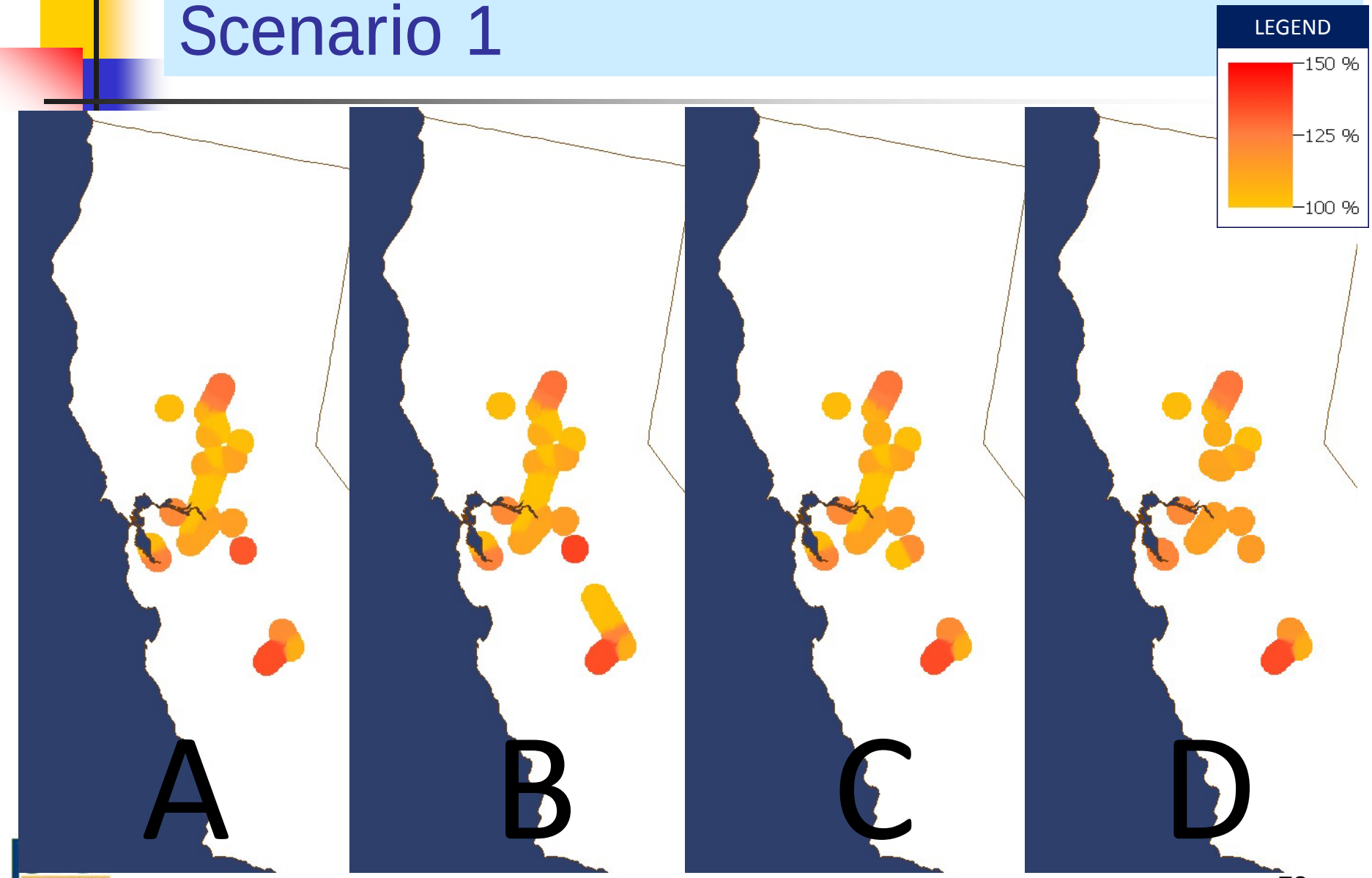
N-0	Summer	Slide 77
	Spring	
	Fall	

		Scenario					
		1	4	6	7	8	10
N-1	Summer	Slide 78	Slide 79	Slide 80	Slide 81	Slide 82	Slide 83
	Spring	Slide 84	Slide 85	Slide 86	Slide 87	Slide 88	Slide 89
	Fall	Slide 90	Slide 91	Slide 92	Slide 93	Slide 94	Slide 95

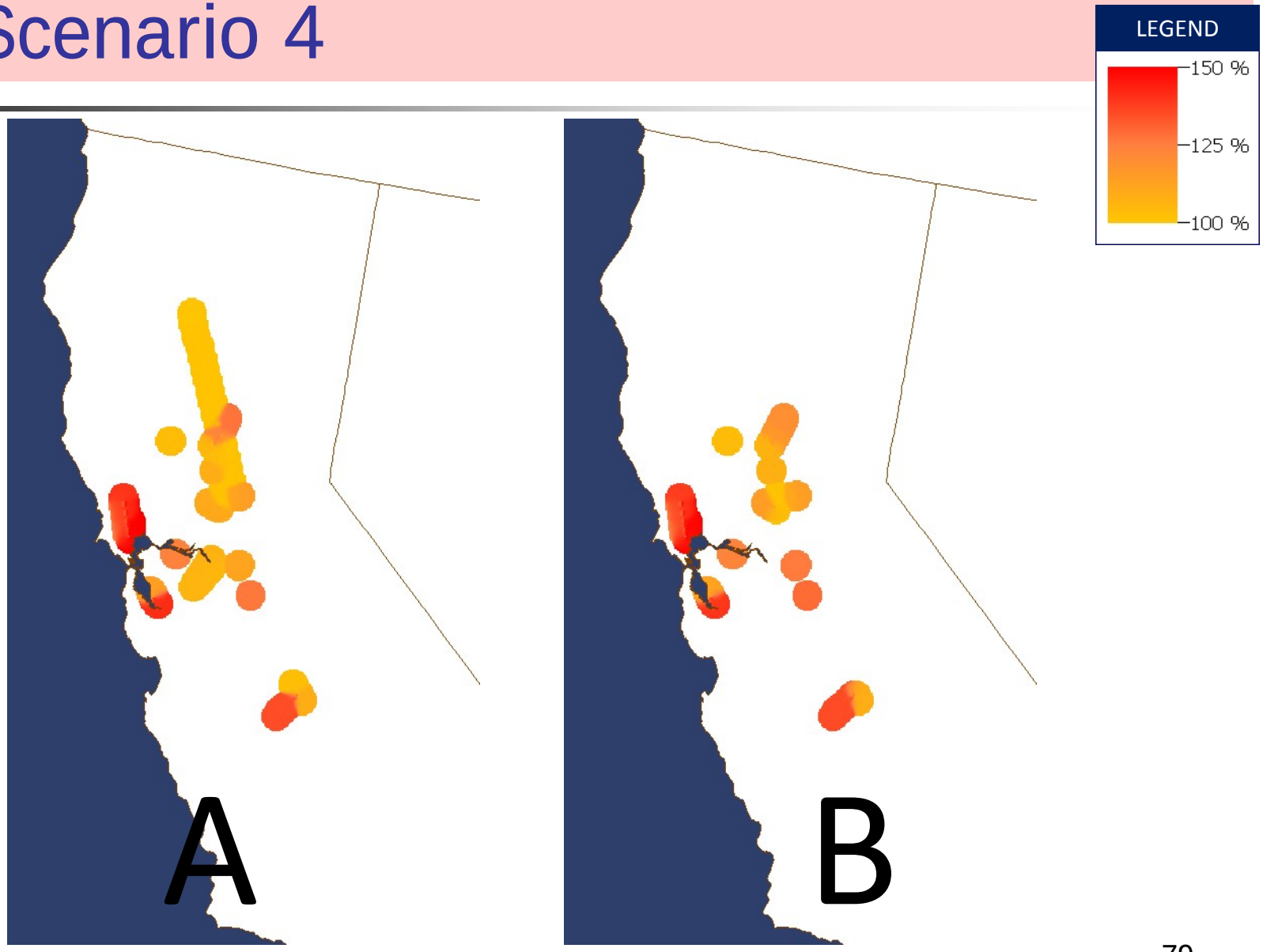
2020 Spring Peak, Summer Peak, Fall Off-Peak Base Line Loading Map



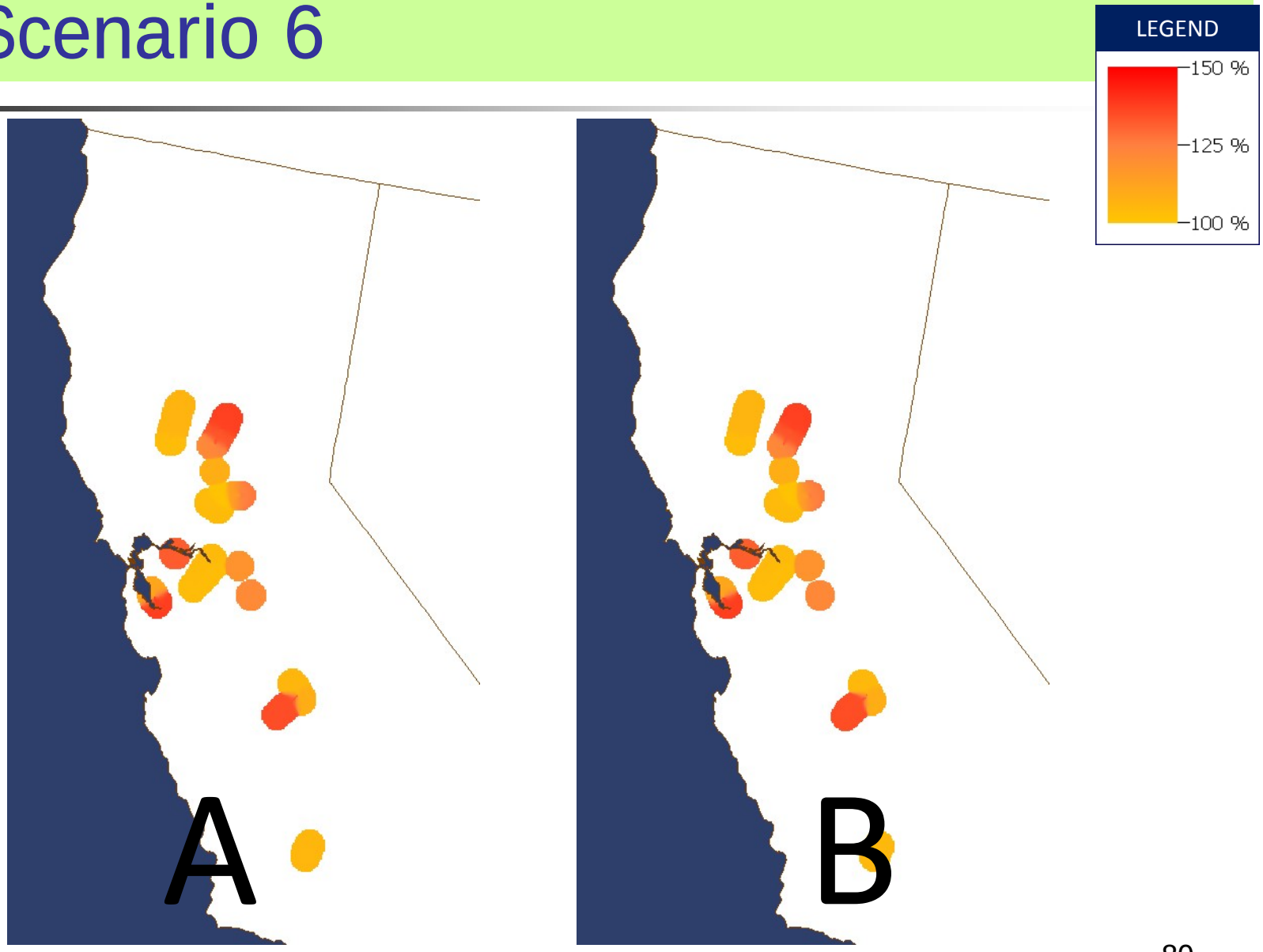
2020 Summer N-1 Line Loading Map Scenario 1



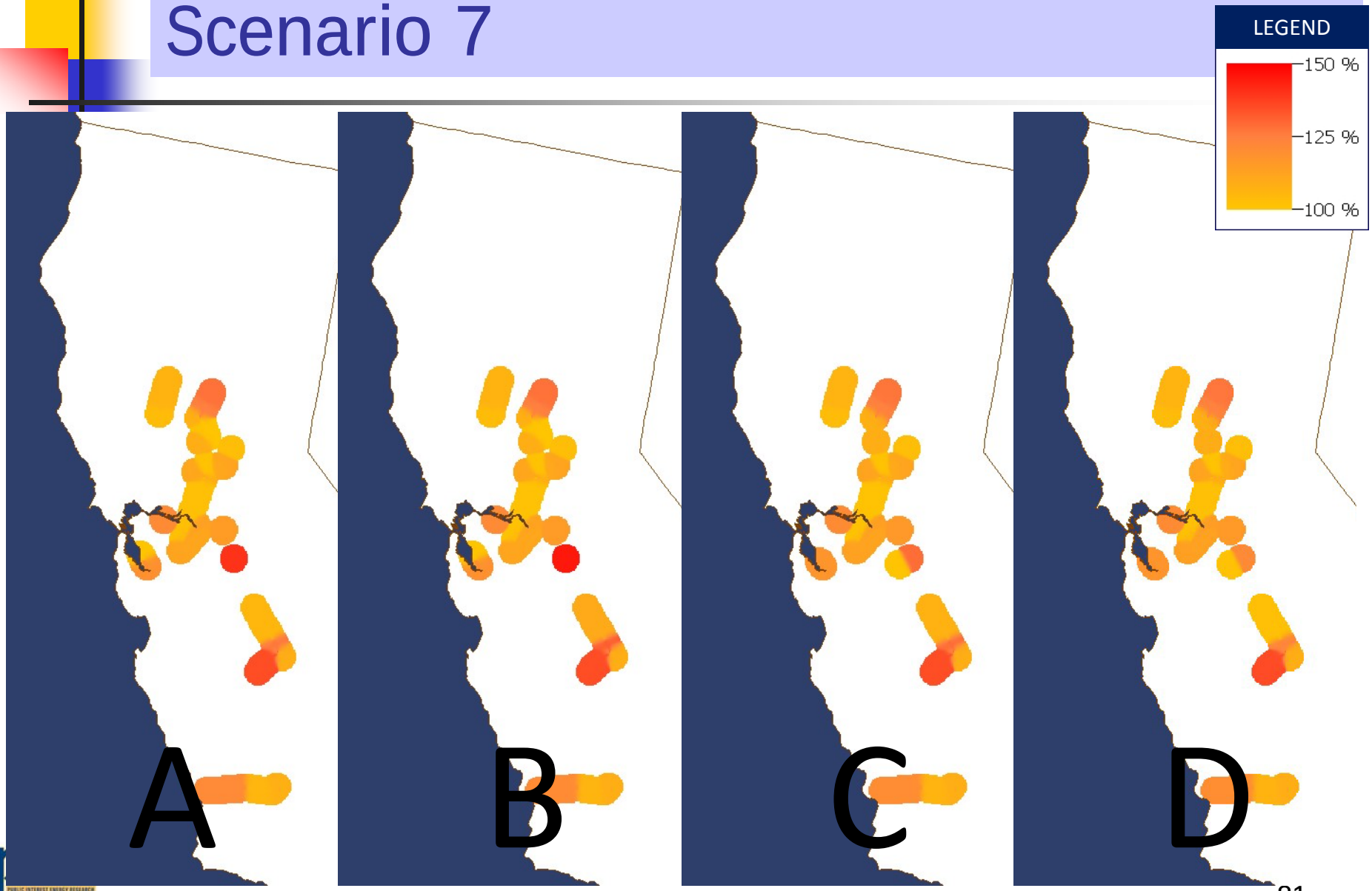
2020 Summer N-1 Line Loading Map Scenario 4



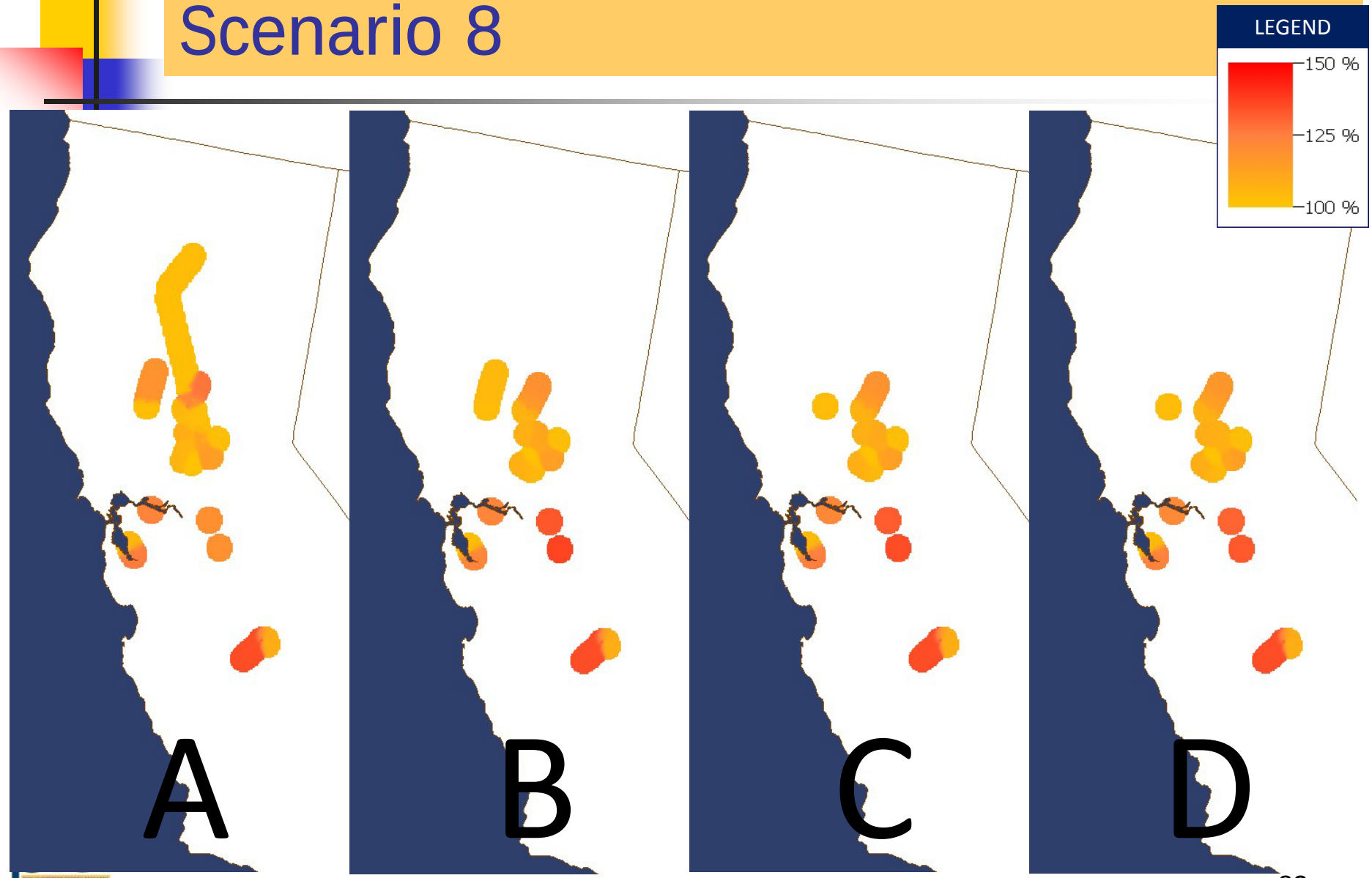
2020 Summer N-1 Line Loading Map Scenario 6



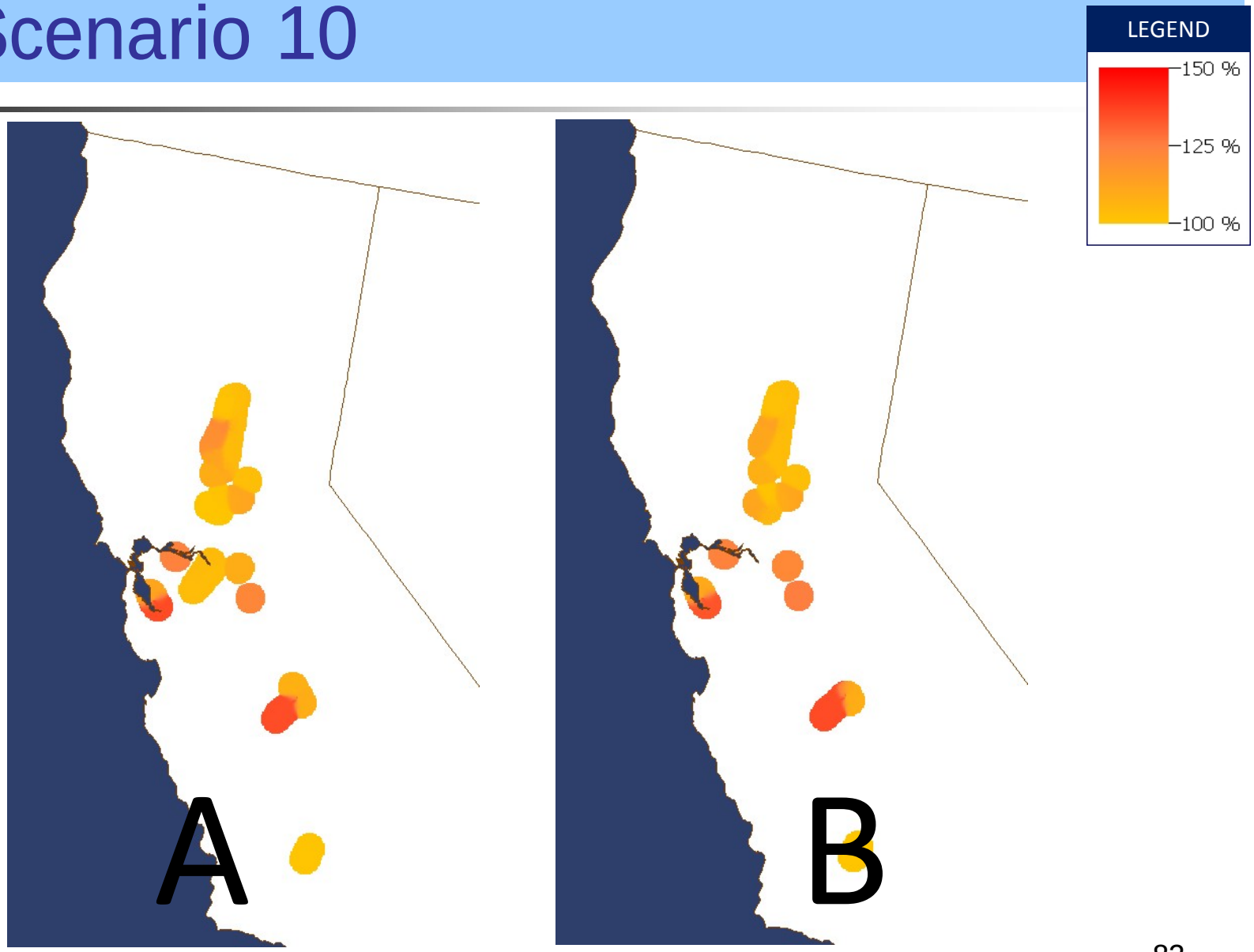
2020 Summer N-1 Line Loading Map Scenario 7



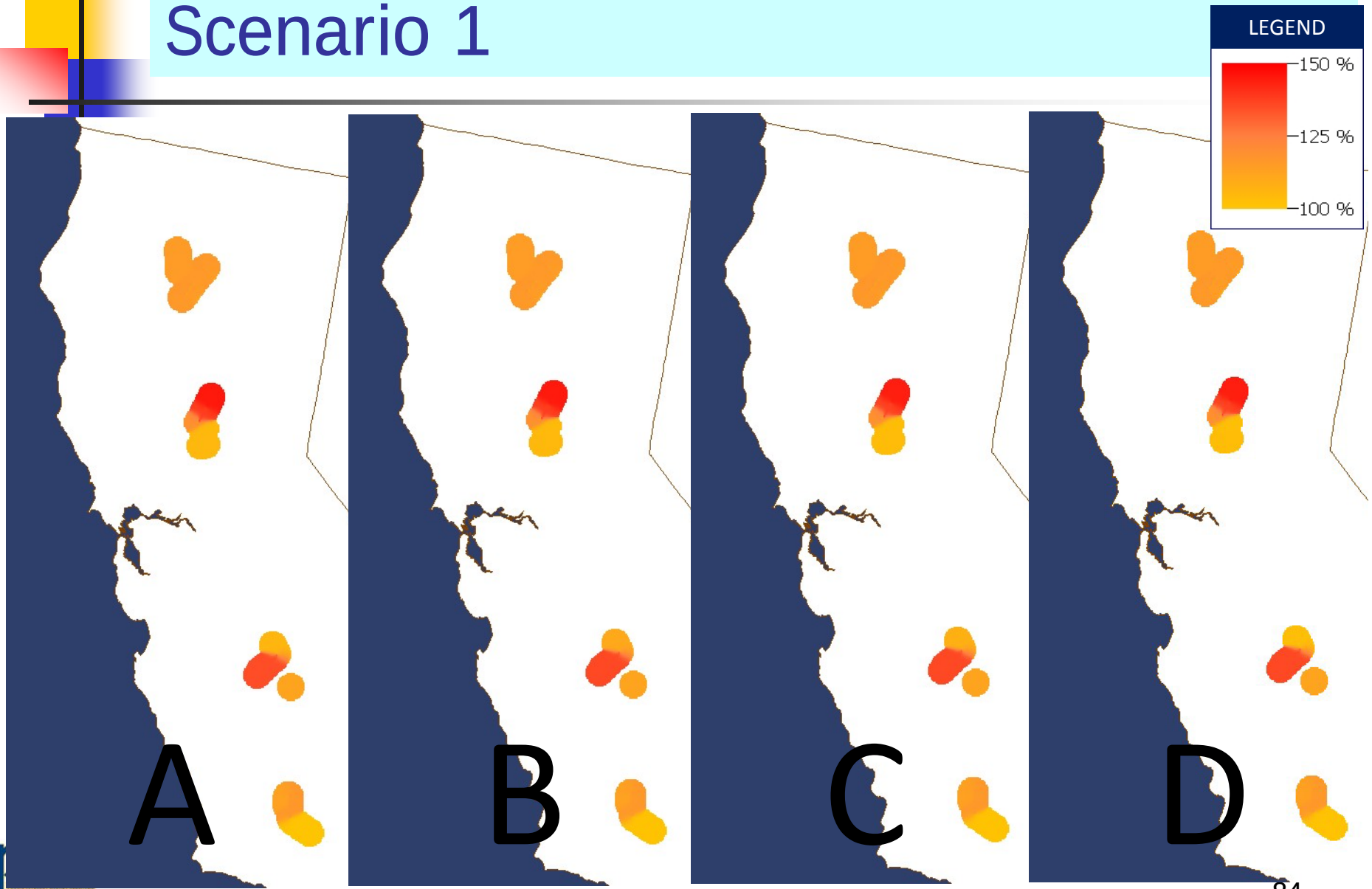
2020 Summer N-1 Line Loading Map Scenario 8



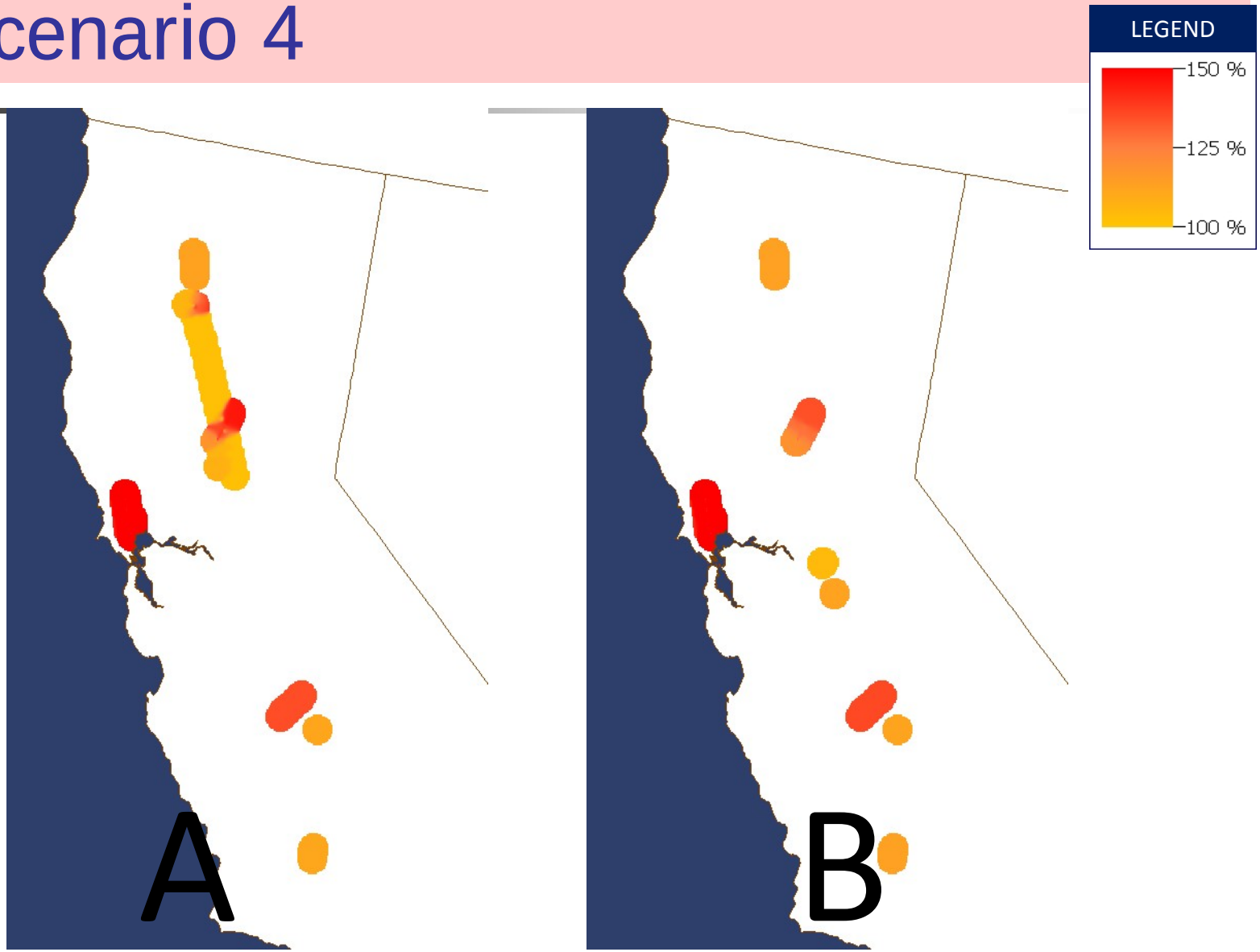
2020 Summer N-1 Line Loading Map Scenario 10



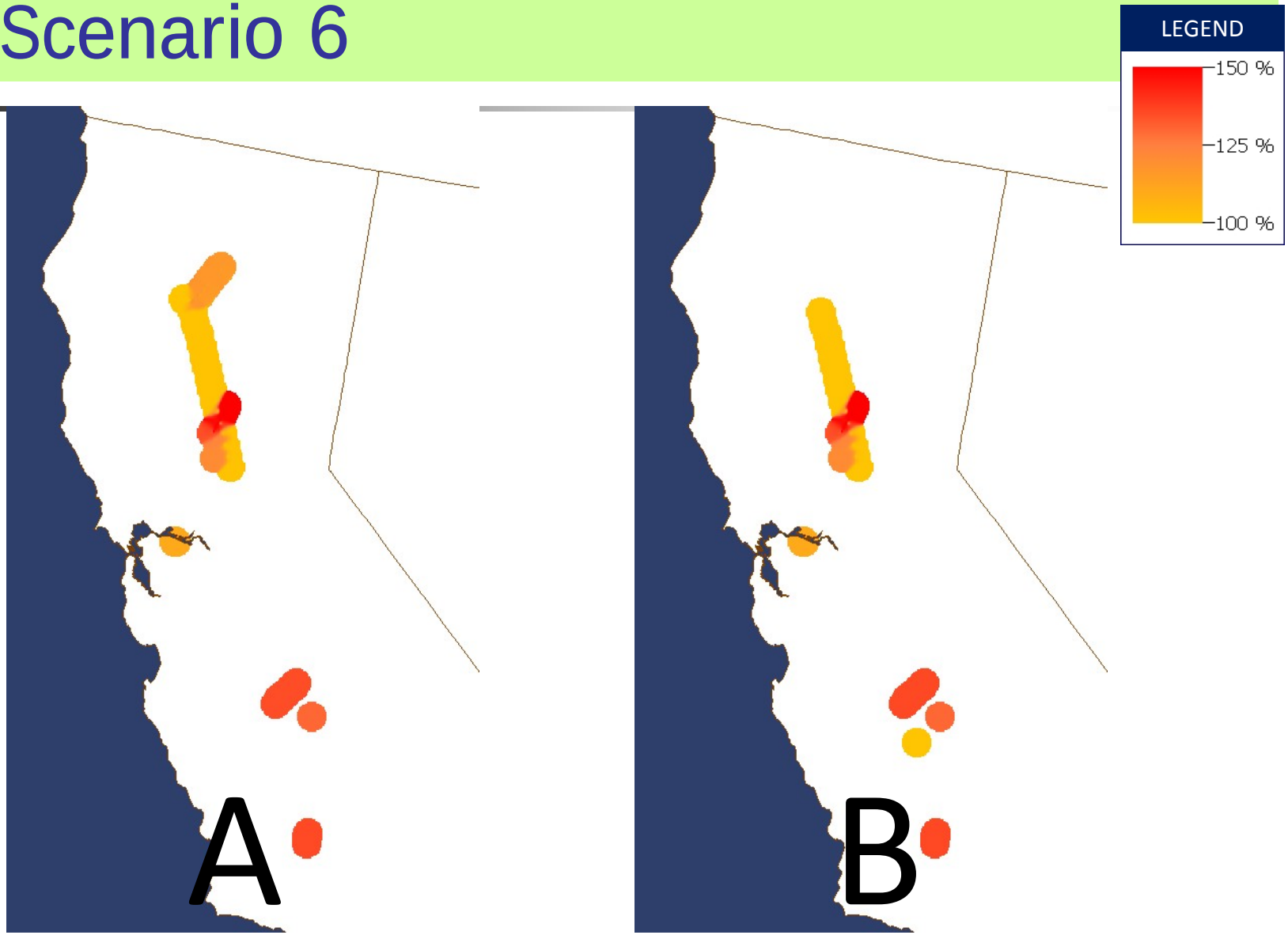
2020 Spring N-1 Line Loading Map Scenario 1



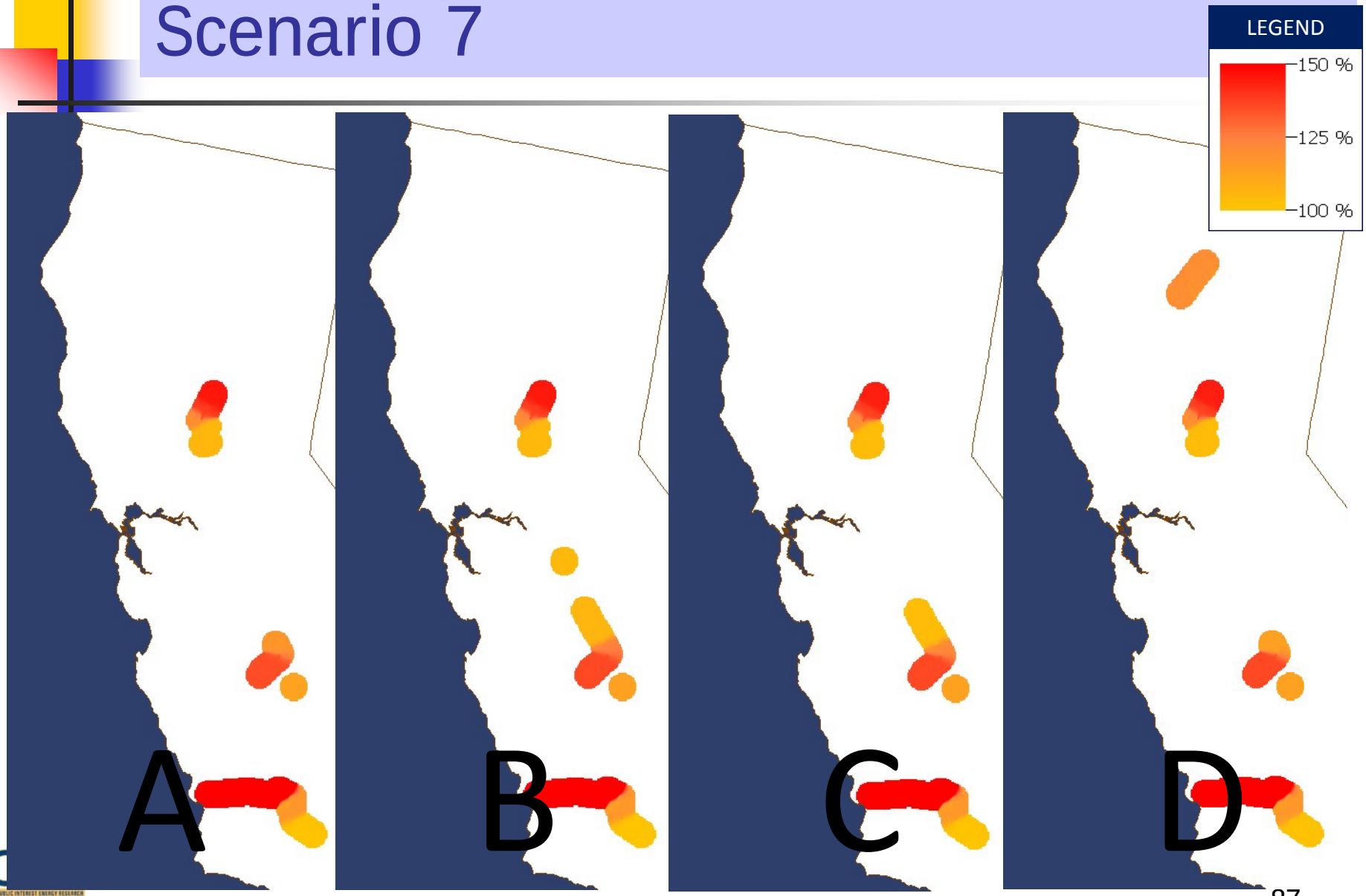
2020 Spring N-1 Line Loading Map Scenario 4



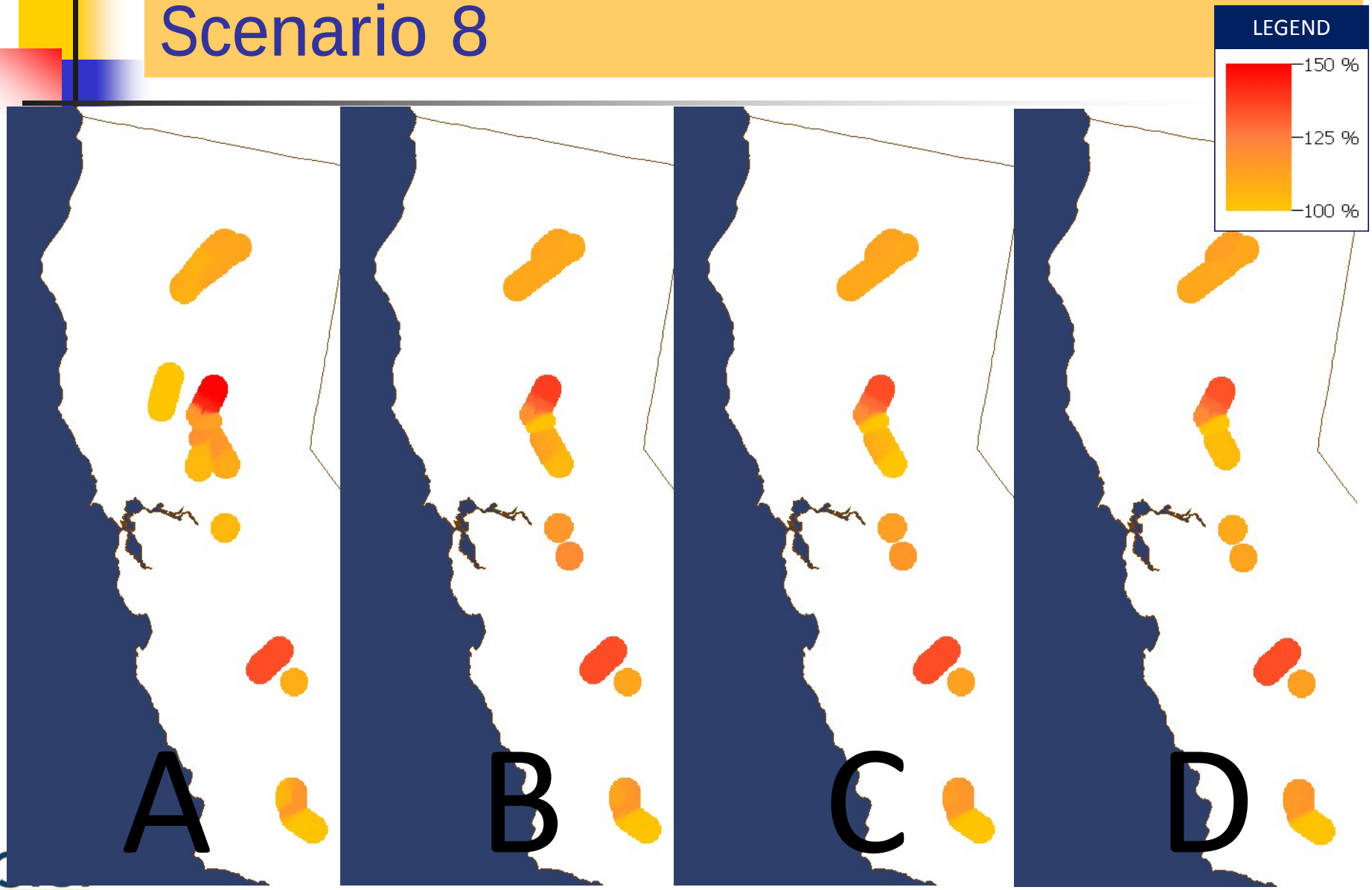
2020 Spring N-1 Line Loading Map Scenario 6



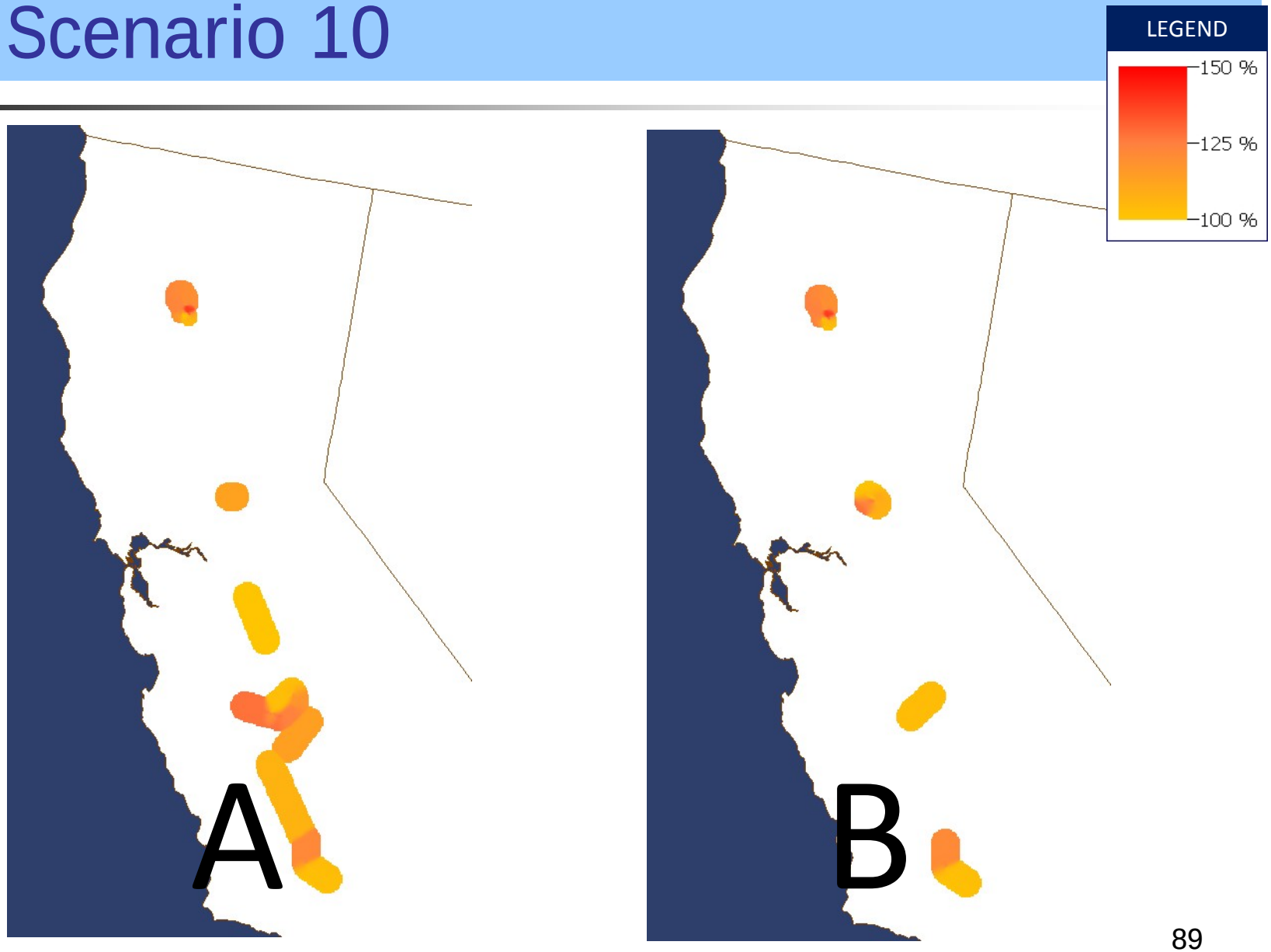
2020 Spring N-1 Line Loading Map Scenario 7



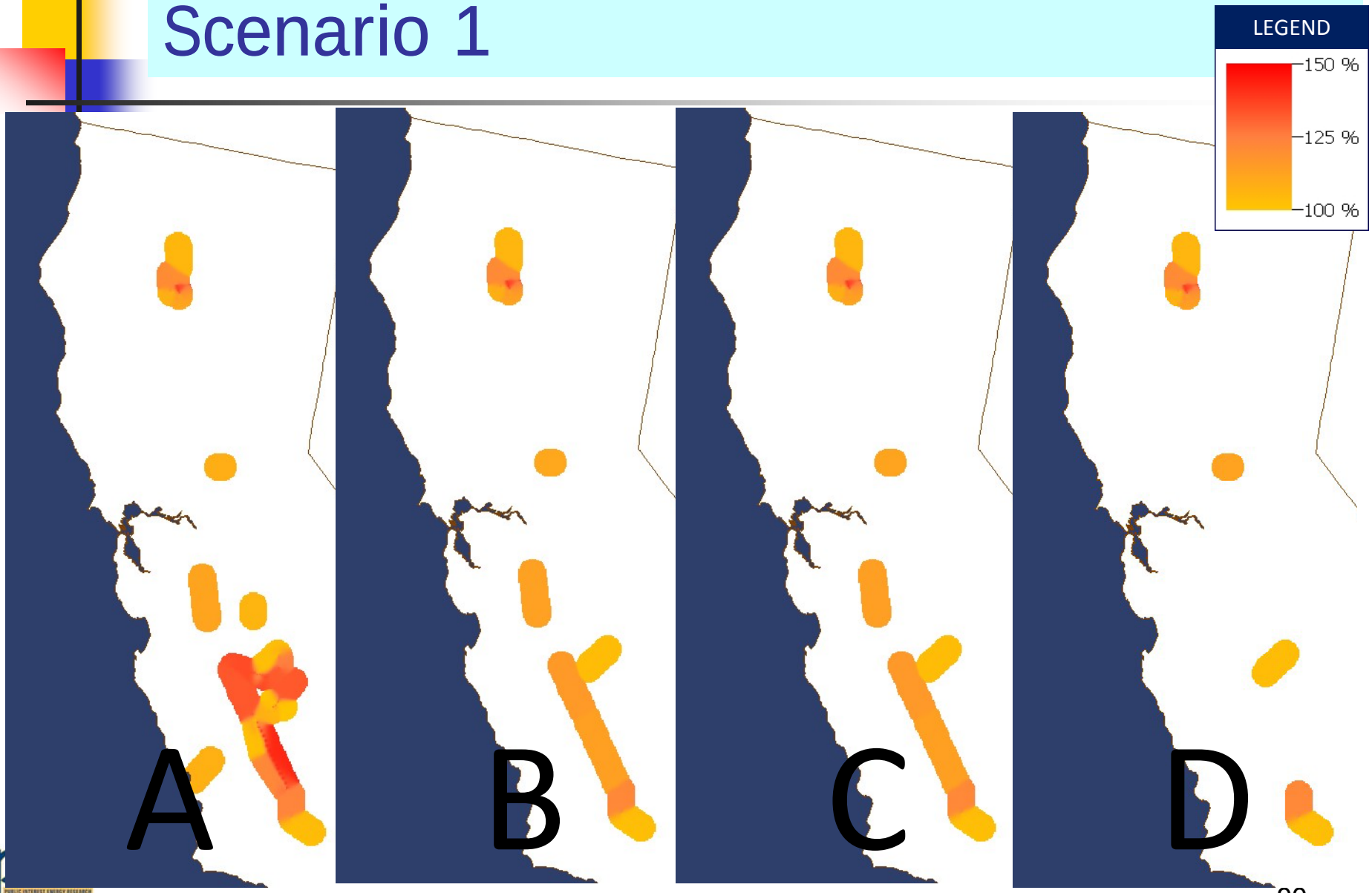
2020 Spring N-1 Line Loading Map Scenario 8



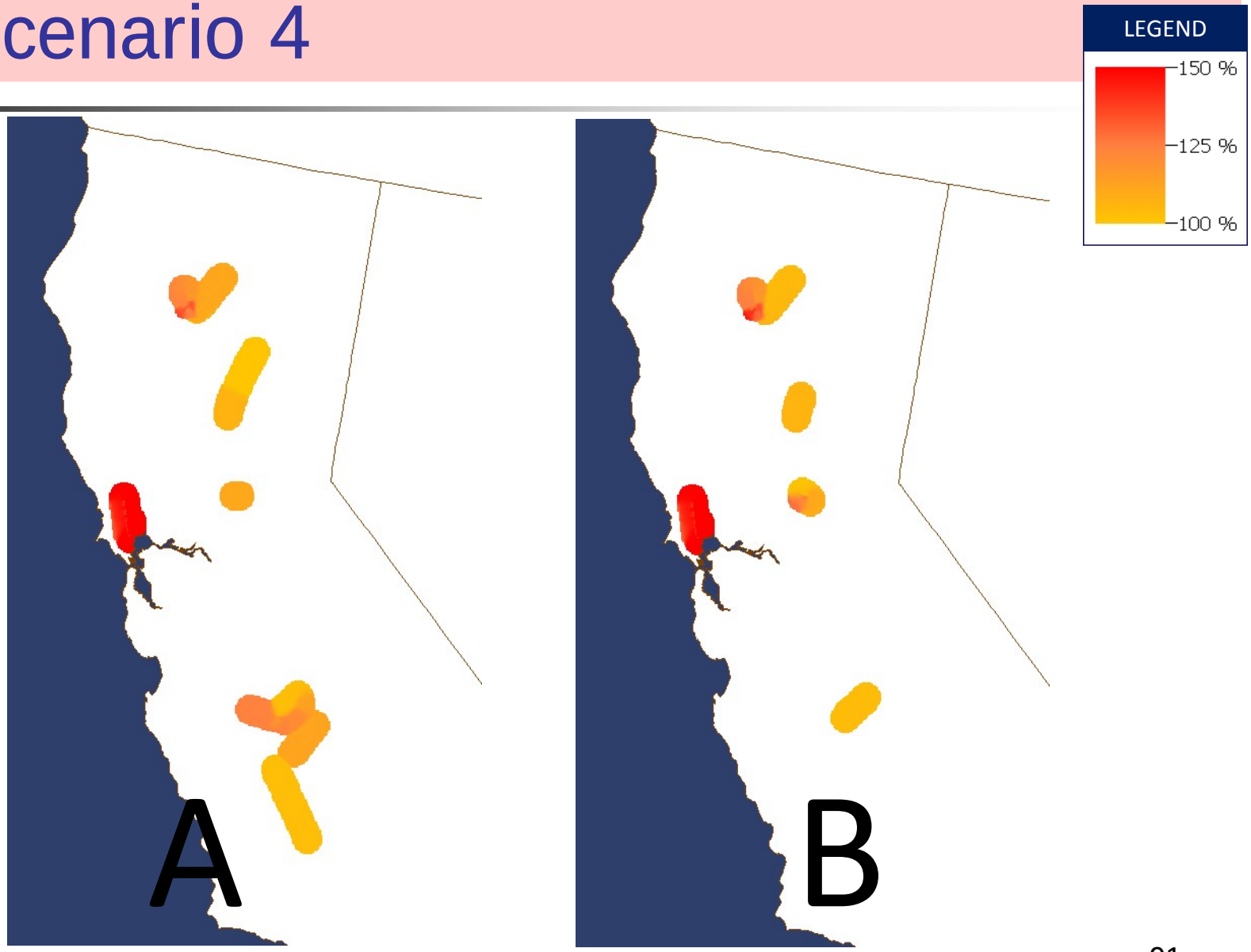
2020 Spring N-1 Line Loading Map Scenario 10



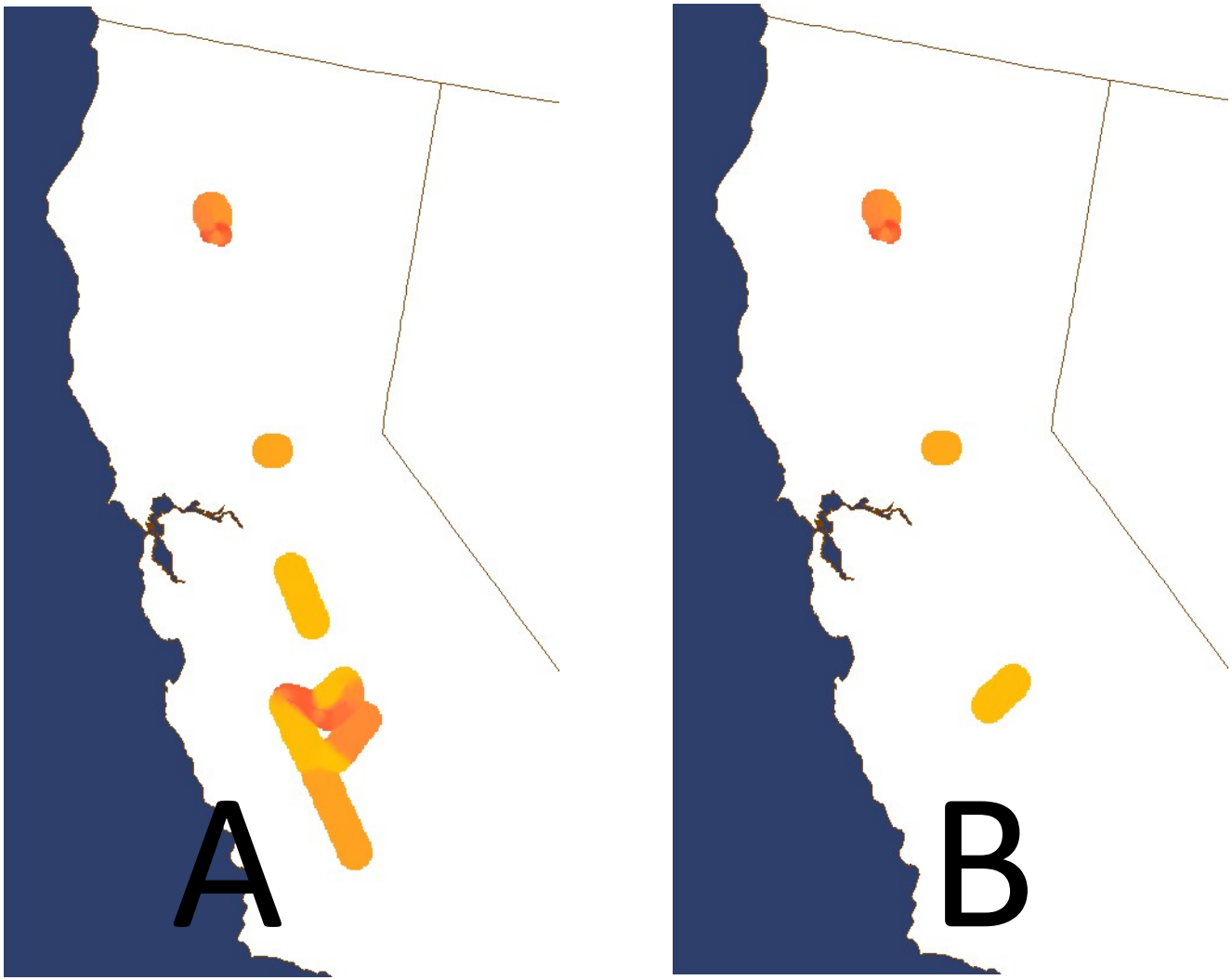
2020 Fall N-1 Line Loading Map Scenario 1

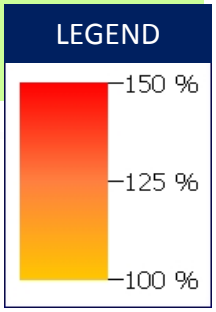


2020 Fall N-1 Line Loading Map Scenario 4

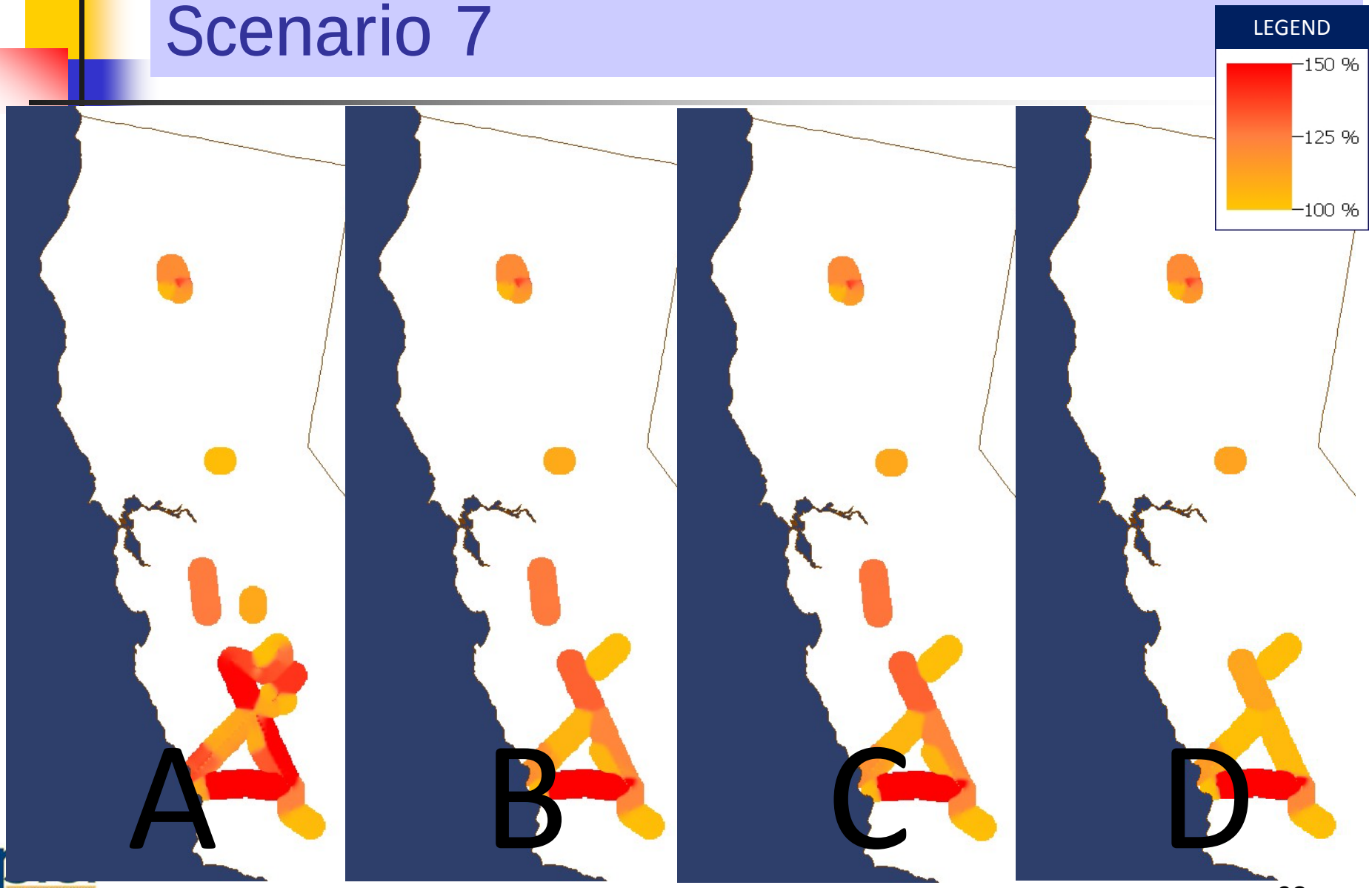


2020 Fall N-1 Line Loading Map Scenario 6

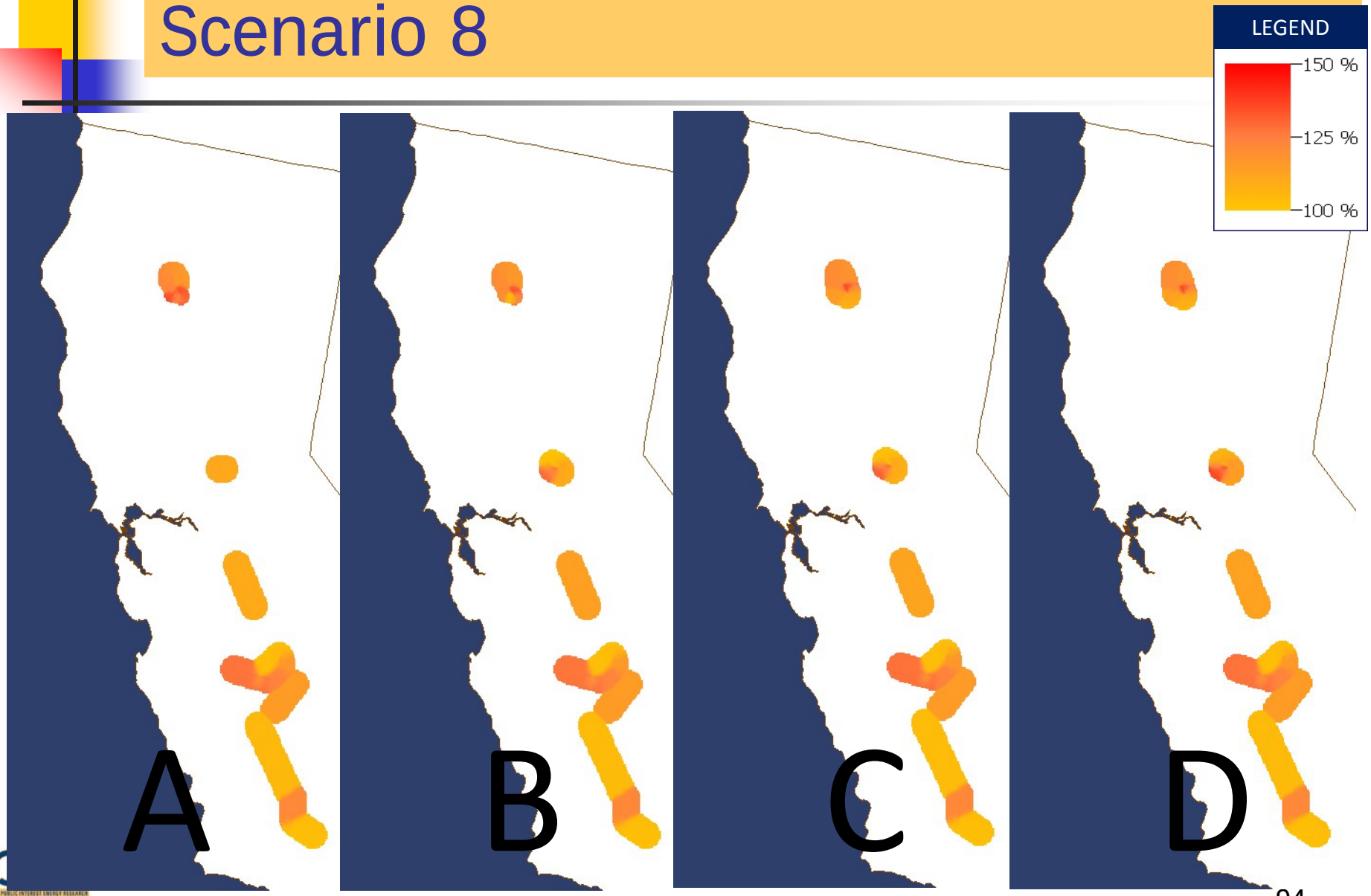




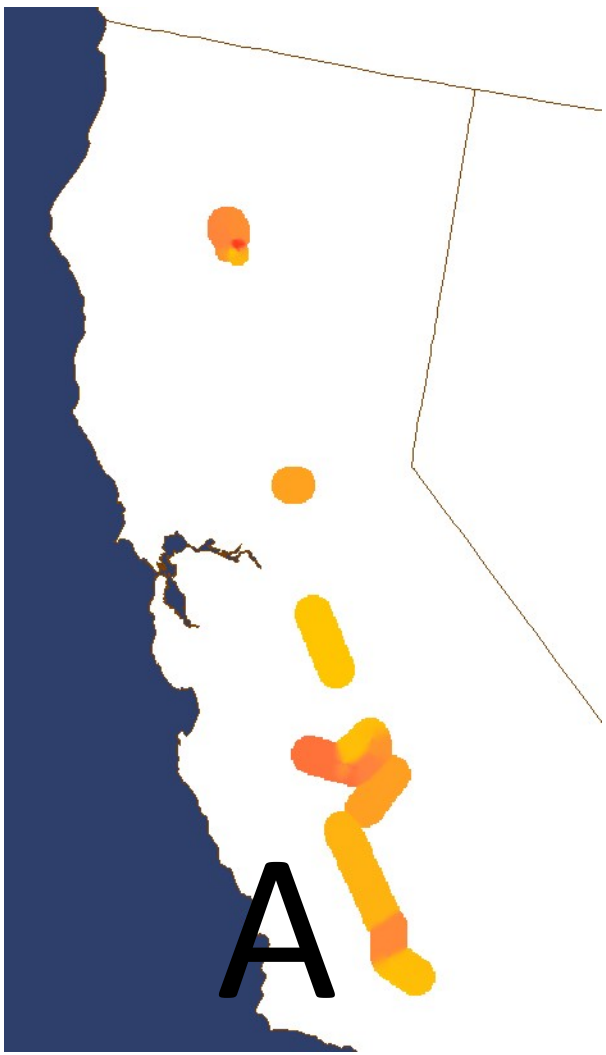
2020 Fall N-1 Line Loading Map Scenario 7

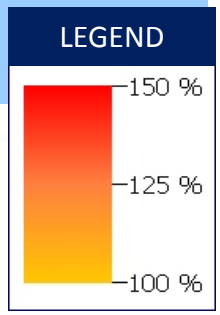


2020 Fall N-1 Line Loading Map Scenario 8



2020 Fall N-1 Line Loading Map Scenario 10





Next Steps

- Complete the analysis for the remaining 4 scenarios
- Further investigate potential solutions (run N-2s)
- Rank transmission solutions