



PROJECT MANAGEMENT DIVISION

2015 Nevada Transportation Conference

Cole Mortensen, PE
Asst. Chief of Project Management

PM Division Responsibilities

➤ FHWA Major Projects

- Total project cost > \$100 Million

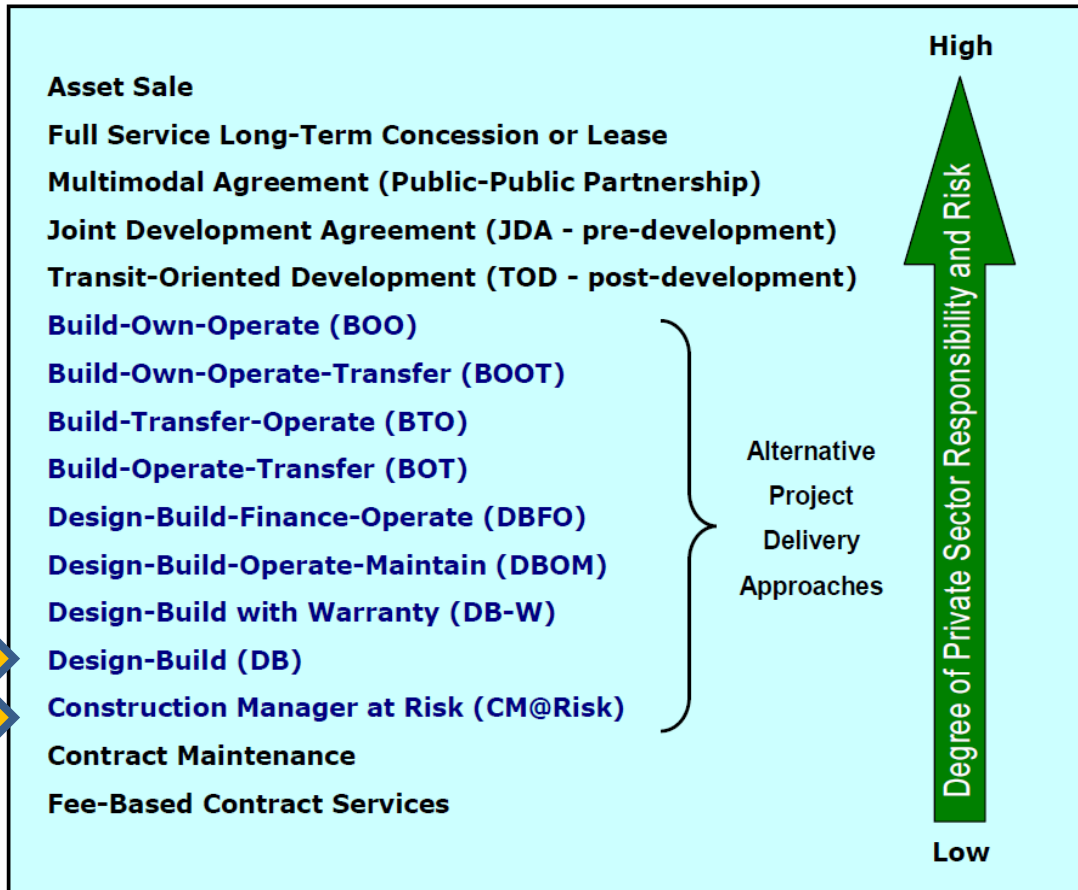
- FHWA Project Management Plan & Finance Plan

➤ NDOT's Major Capacity Improvement Projects (typically > \$25 million)

➤ Pioneer Program

- Innovative Project Delivery (CMAR, DB, DBF)
- Unsolicited Proposals

Exhibit 6 – Major Types of Public-Private Partnerships

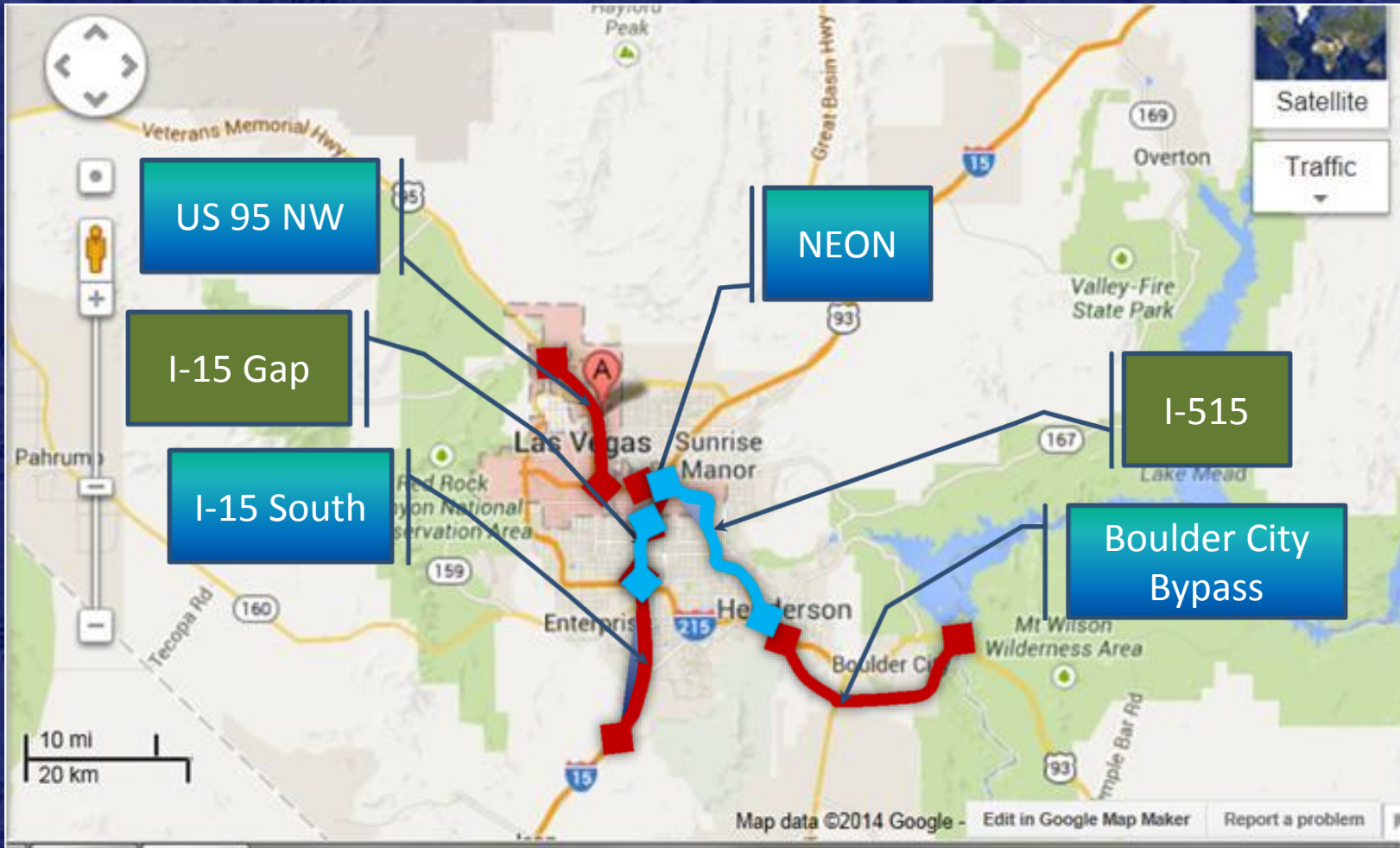




FHWA'S MAJOR PROJECTS

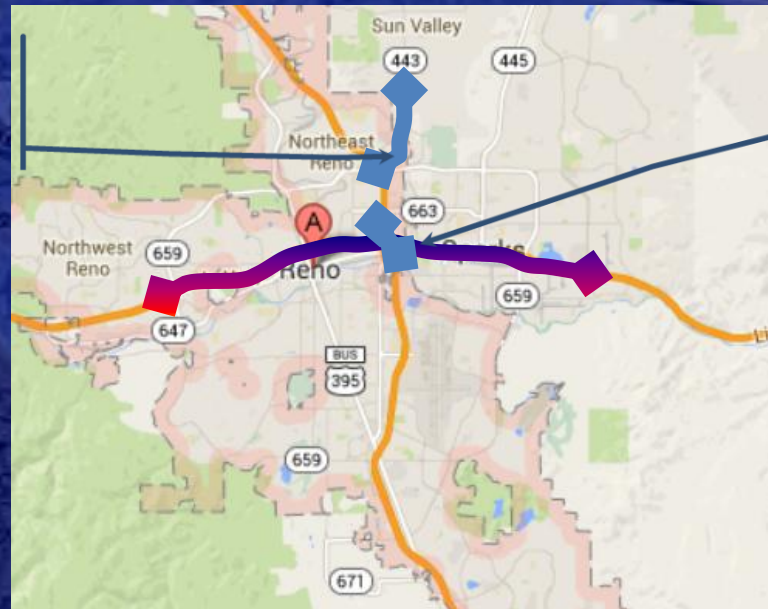


FHWA Major Projects - Clark



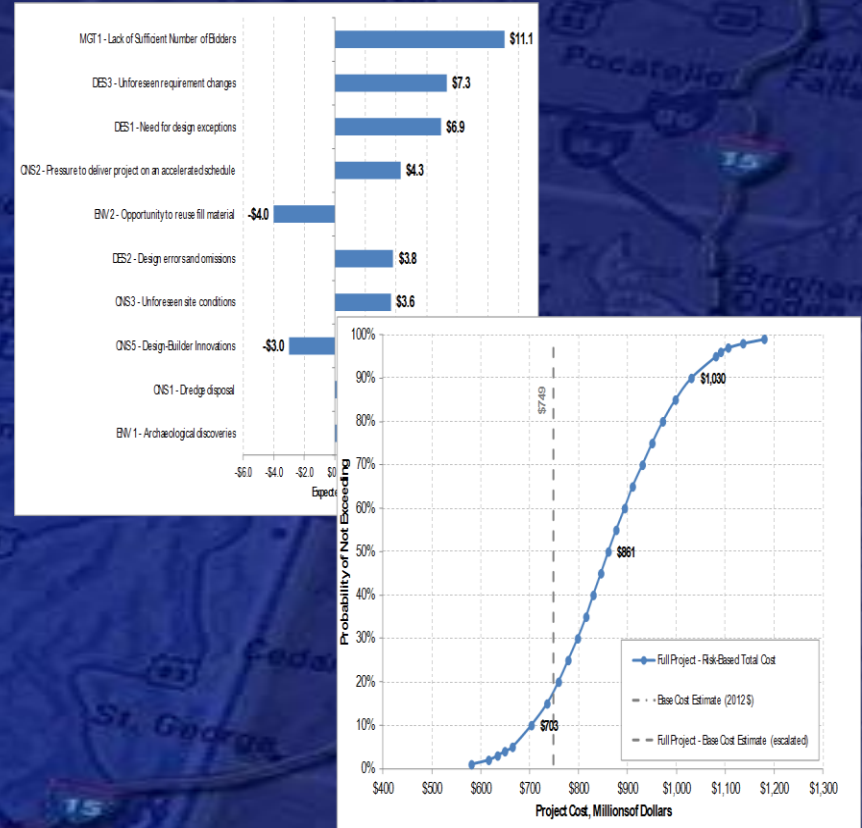
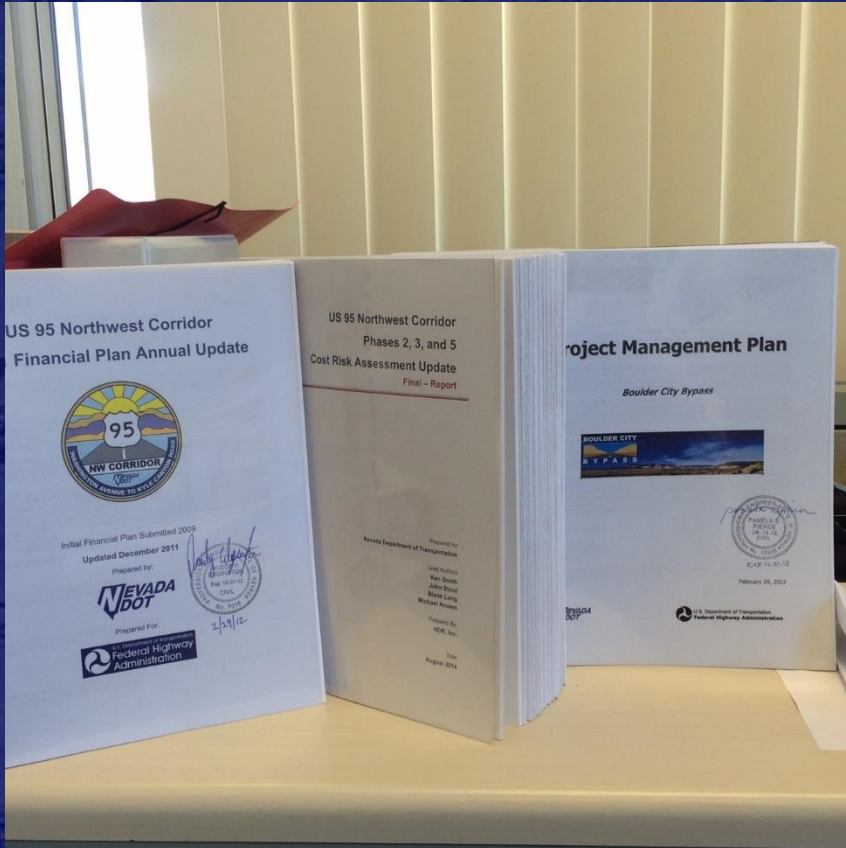
FHWA Major Projects - Washoe

Pyramid Connector

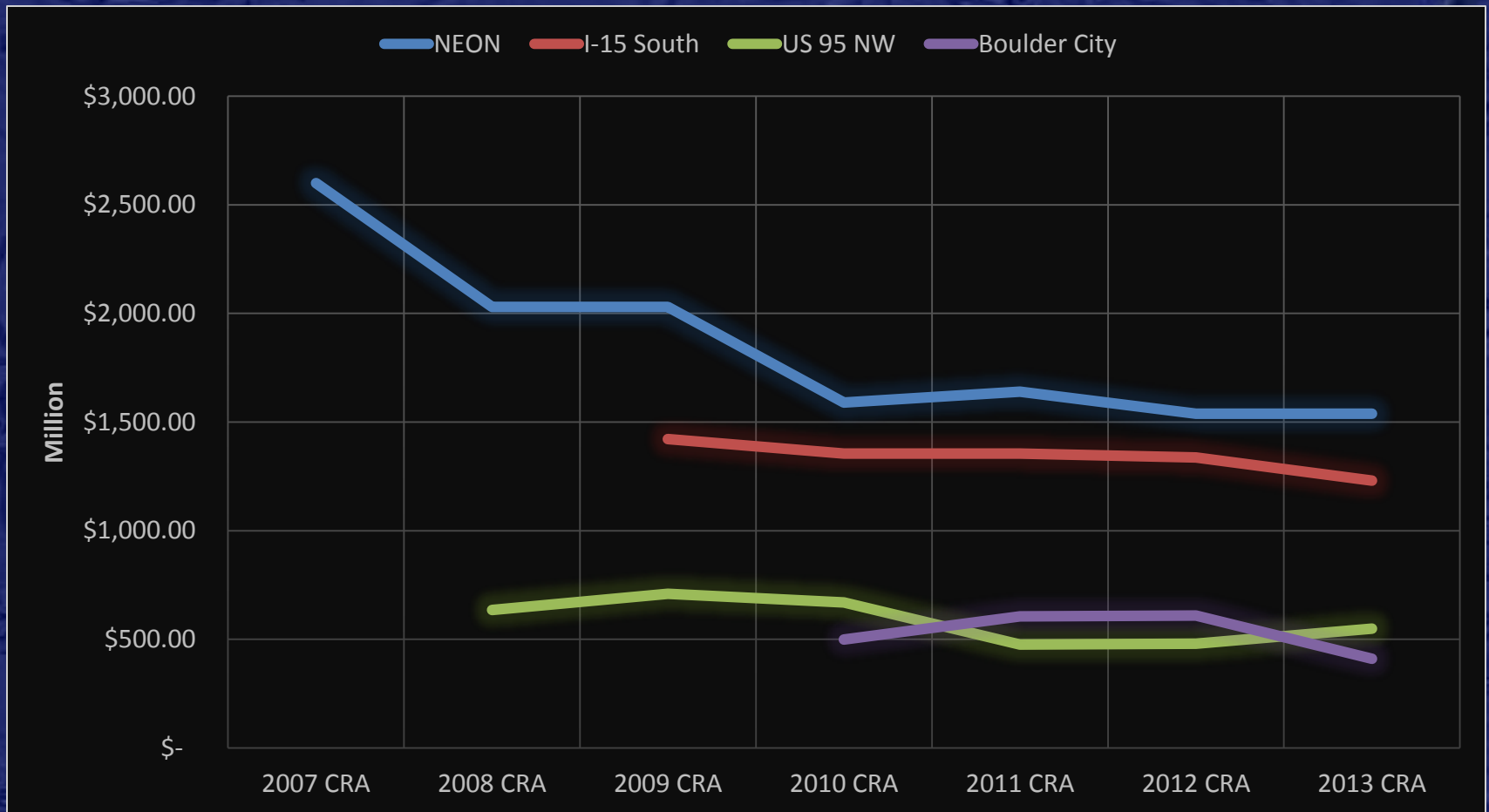


I-80 including
Spaghetti Bowl

Risk Management, Cost Risk Analysis, Finance Plan and PMP



Major Projects Cost Trend



Cost / Risk Management

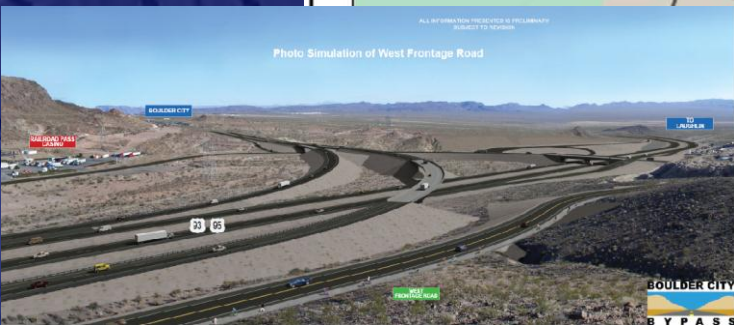
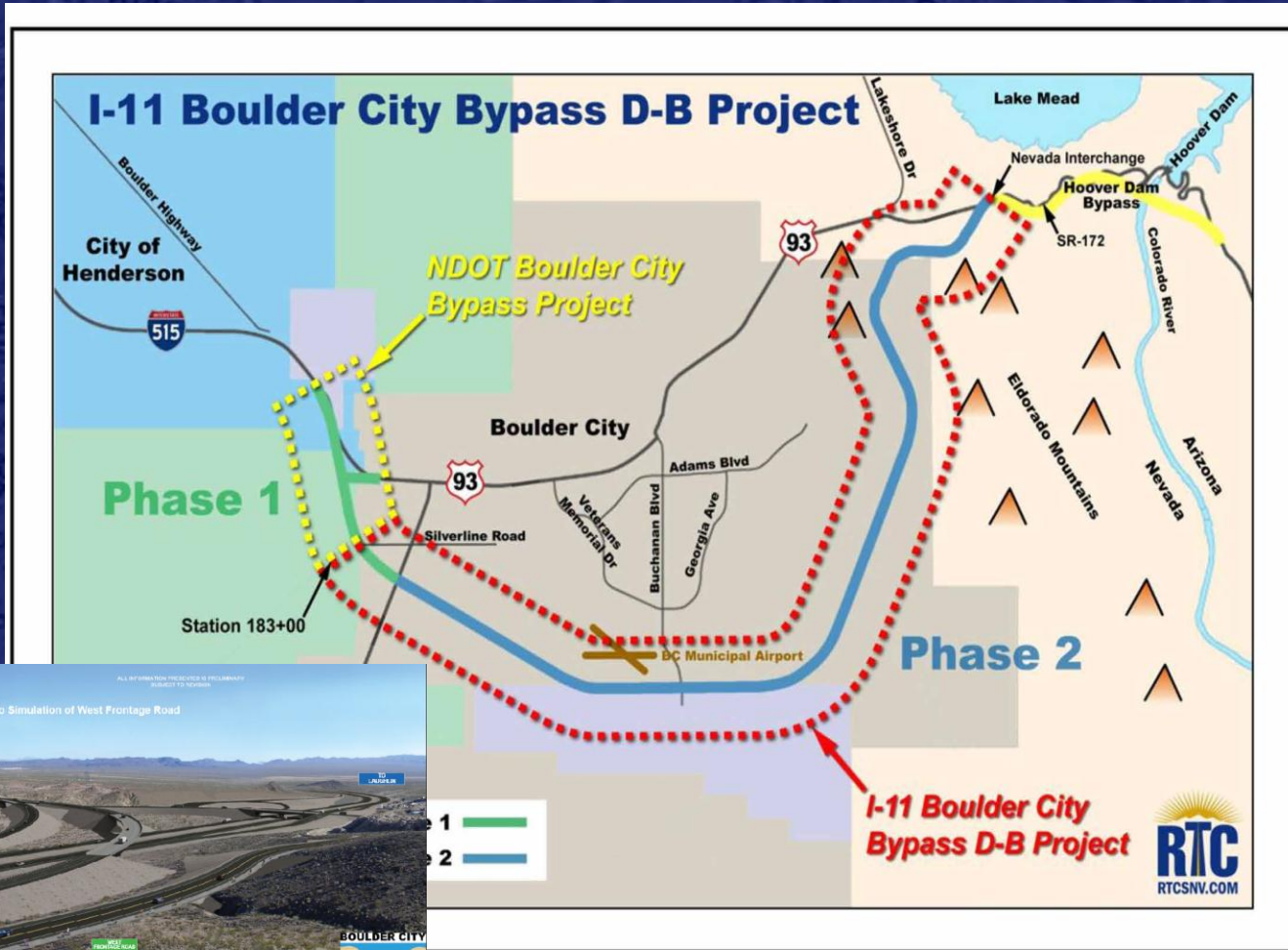
- Redesign of base concept - 2007
- NEON VA Study - October 2008
- CRA #1 - December 2008
- CRA #2 - October 2010
- Scoping Workshop - November 2010
- Phase 1 CRA - March 2011
- TAC Workshop - August 2011
- MLK+I VA Study - November 2011
- Every Day Counts - December 2011
- ABC Workshop - March 2012
- Every Day Counts - September 2012
- Risk Allocation Workshop - June 2013
- R/W CRA - September 2013
- 2013 ICE - October 2013
- R/W CRA –January 2014
- Future Phase CRA - February 2014
- Construction CRA - April 2014
- CRA update – February 2015



FHWA'S MAJOR PROJECTS STATUS

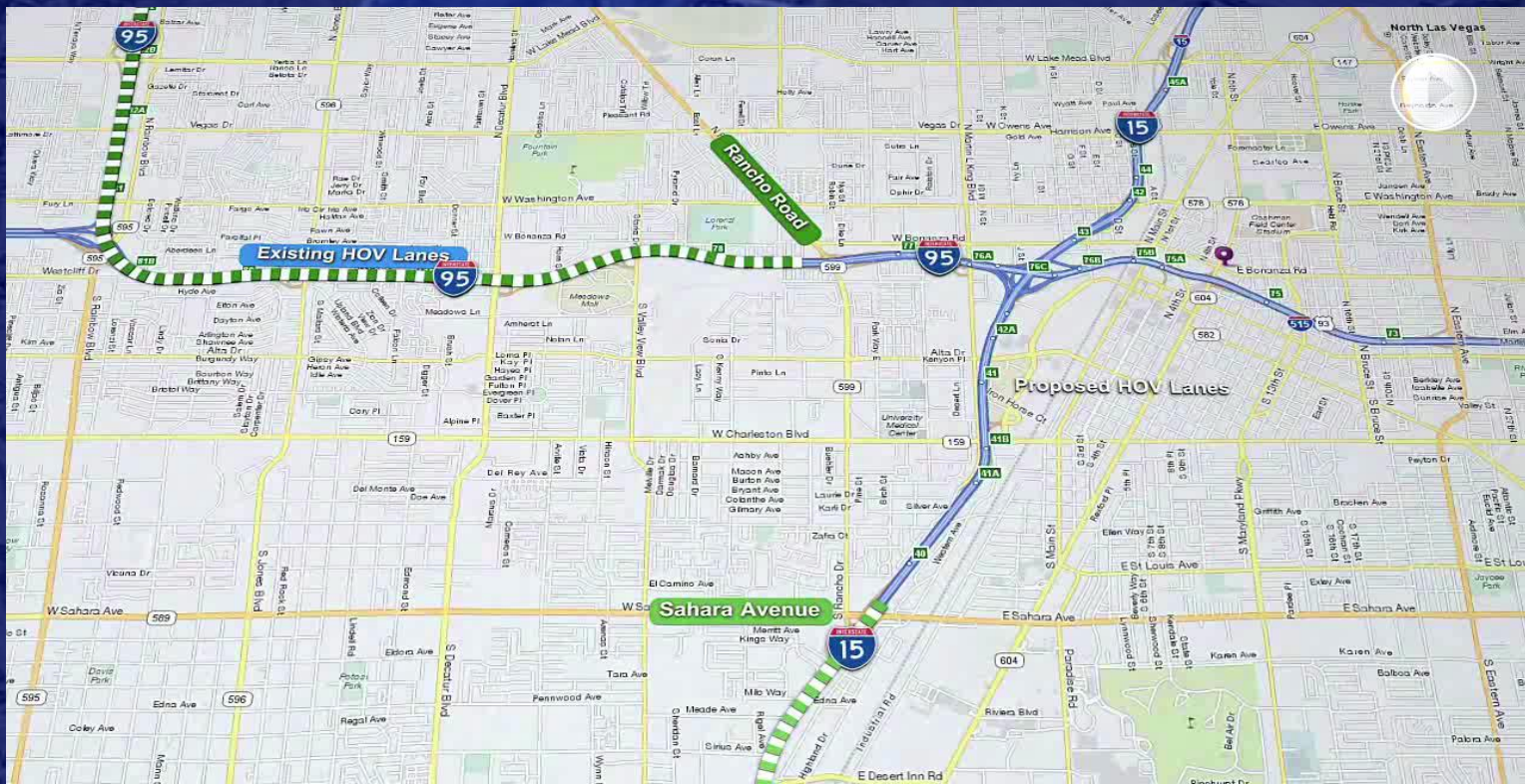


Boulder City Bypass



Project NEON

- HOV System: Adding Lanes and Connectors to Link HOV Lanes on US 95 and I-15



PROJECT LOCATION

Projects:

- 1) I-15 South Sloan Road Interchange ●
- 2) I-15 South Bermuda Road Interchange ●
- 3) I-15 South Starr Avenue Interchange ●
- 4) I-15 South Cactus Avenue Interchange ●
- 5) I-15 South Pebble Road Overpass ●
- 6) I-15 South Freeway Improvements (Phase 1A):

From Blue Diamond Road to Tropicana Avenue

- 7) I-15 South Phase 1B: —
- From Blue Diamond Road to Tropicana Avenue

- 8) I-15 South Phase 2A widening: —
- From Sloan Road to Blue Diamond Road

- 9) I-15 South Phase 2B: —
- From Sloan Road to Tropicana Avenue

- 10) I-15 South – Las Vegas Boulevard-

Two packages:

Package 1: From Silverado Ranch Boulevard to Sunset Road —

Package 2: From St. Rose Parkway to Silverado Ranch Boulevard. —



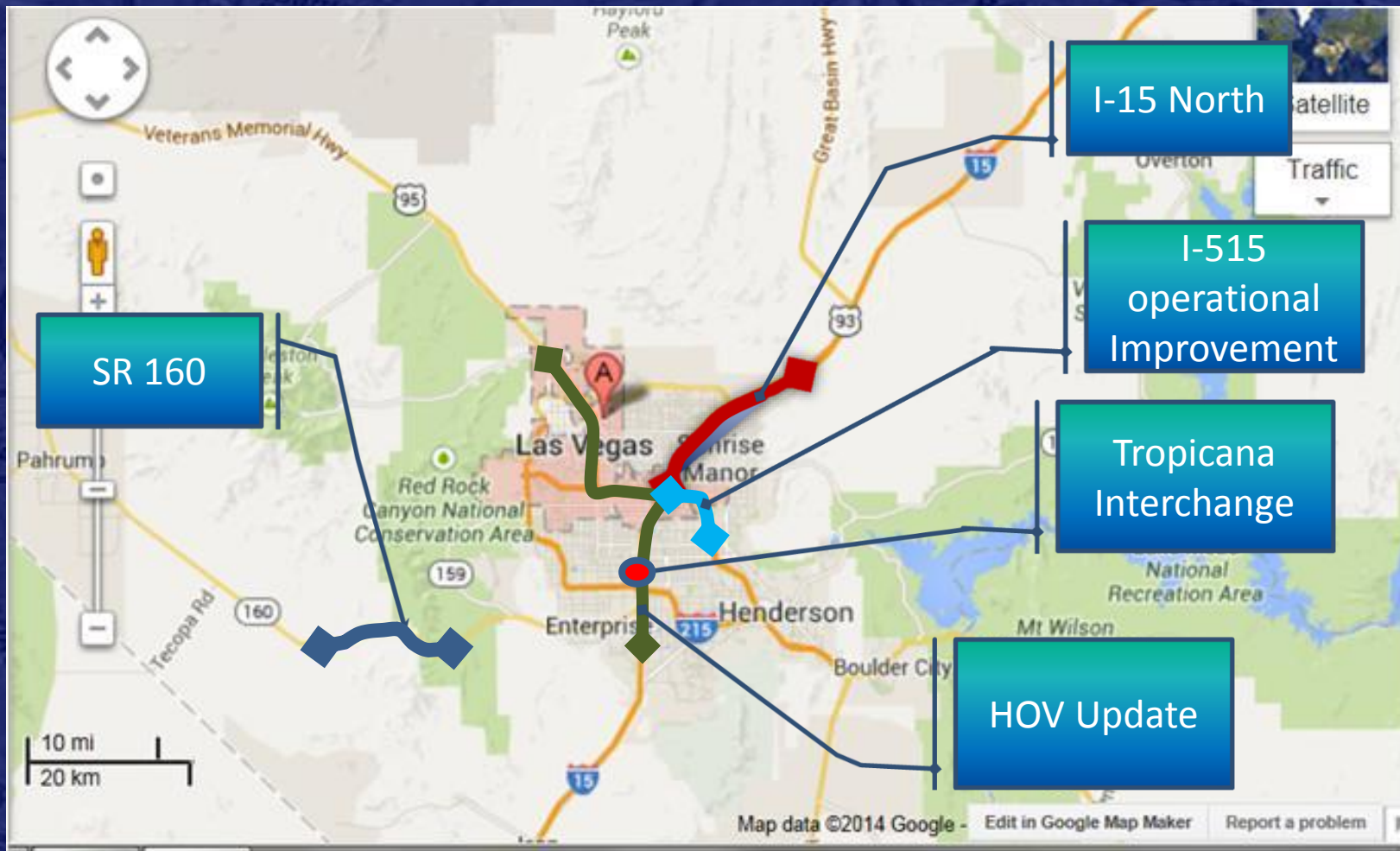
North Limit:
Tropicana Ave.

South Limit:
Sloan Rd.

OTHER PROJECTS

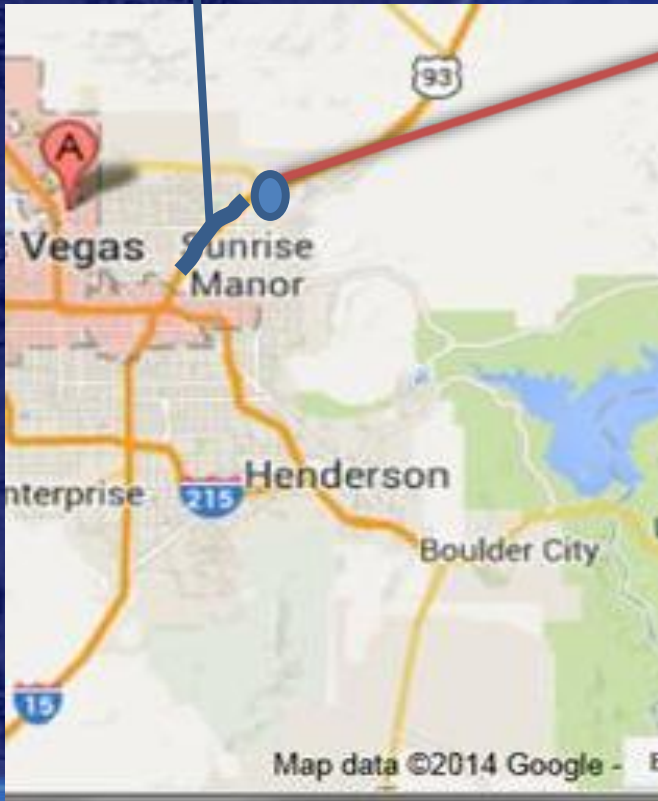


NDOT Major Projects



I-15 North

Phase II (part 2)

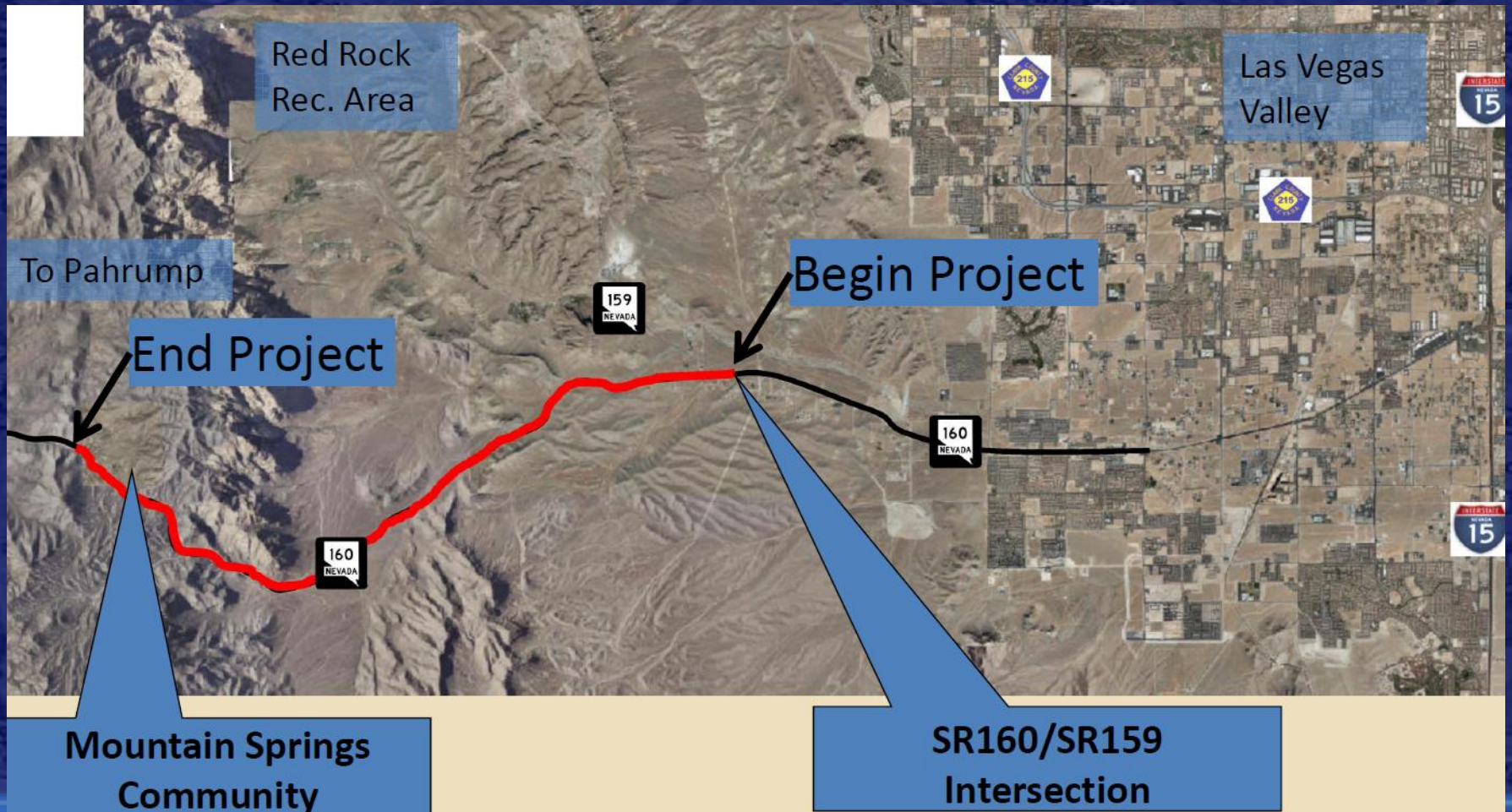


2035 Traffic Volumes



I-15/I-215 Interchange

SR 160 – Project Limits



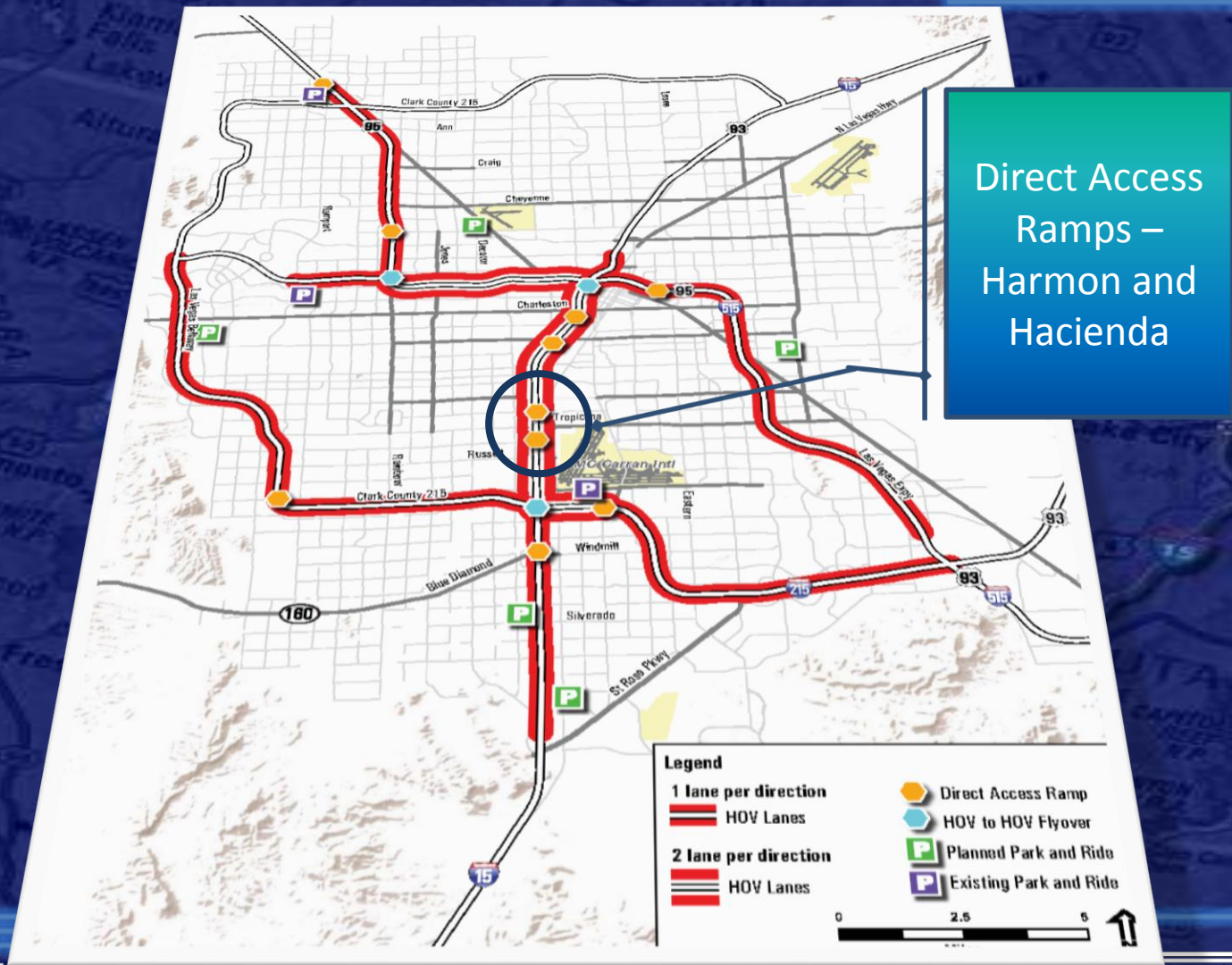
NDOT Major Projects



Near Term HOV System – Major element of US 95, NEON, Gap, I-15 South



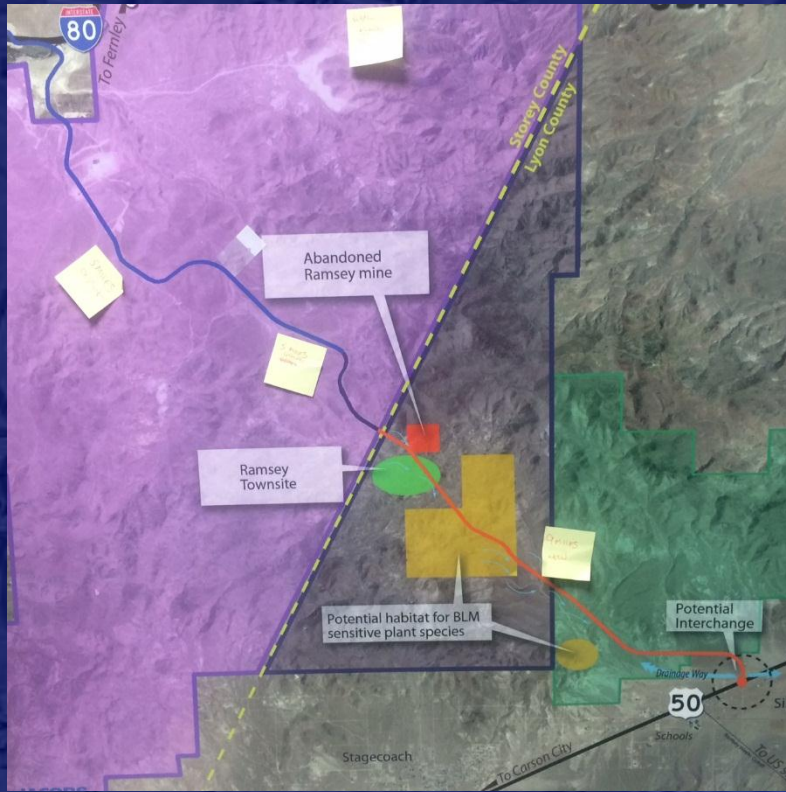
Long Term HOV System



NDOT Major Projects

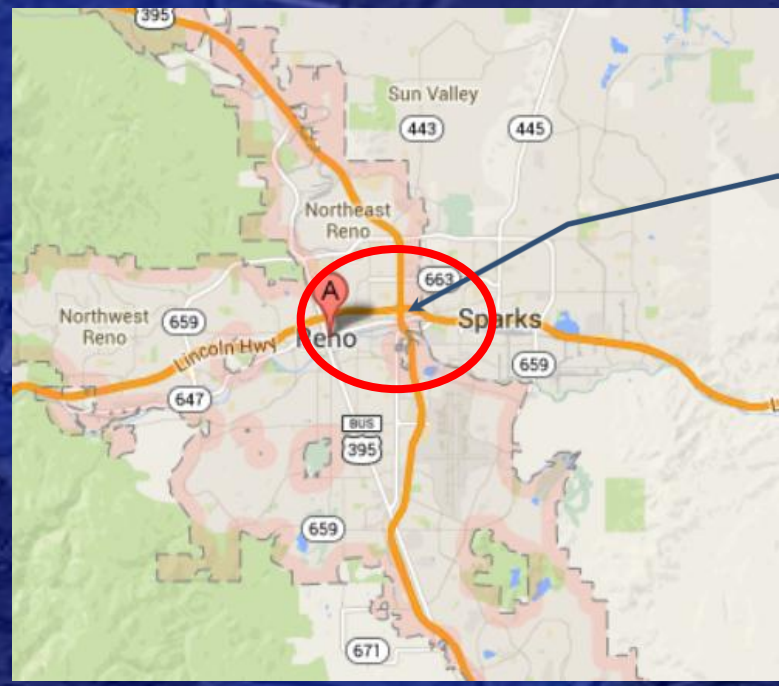


USA Parkway



- Transportation Link from I-80 (Storey County) to US 50 (Lyon County)
- 5.5 Miles Existing Paved Road
- 4.4 Miles Existing Graded Road
- 8.5 Miles of New Roadway

Major Projects - Washoe



Spaghetti Bowl –
Operation
improvements

Other Projects

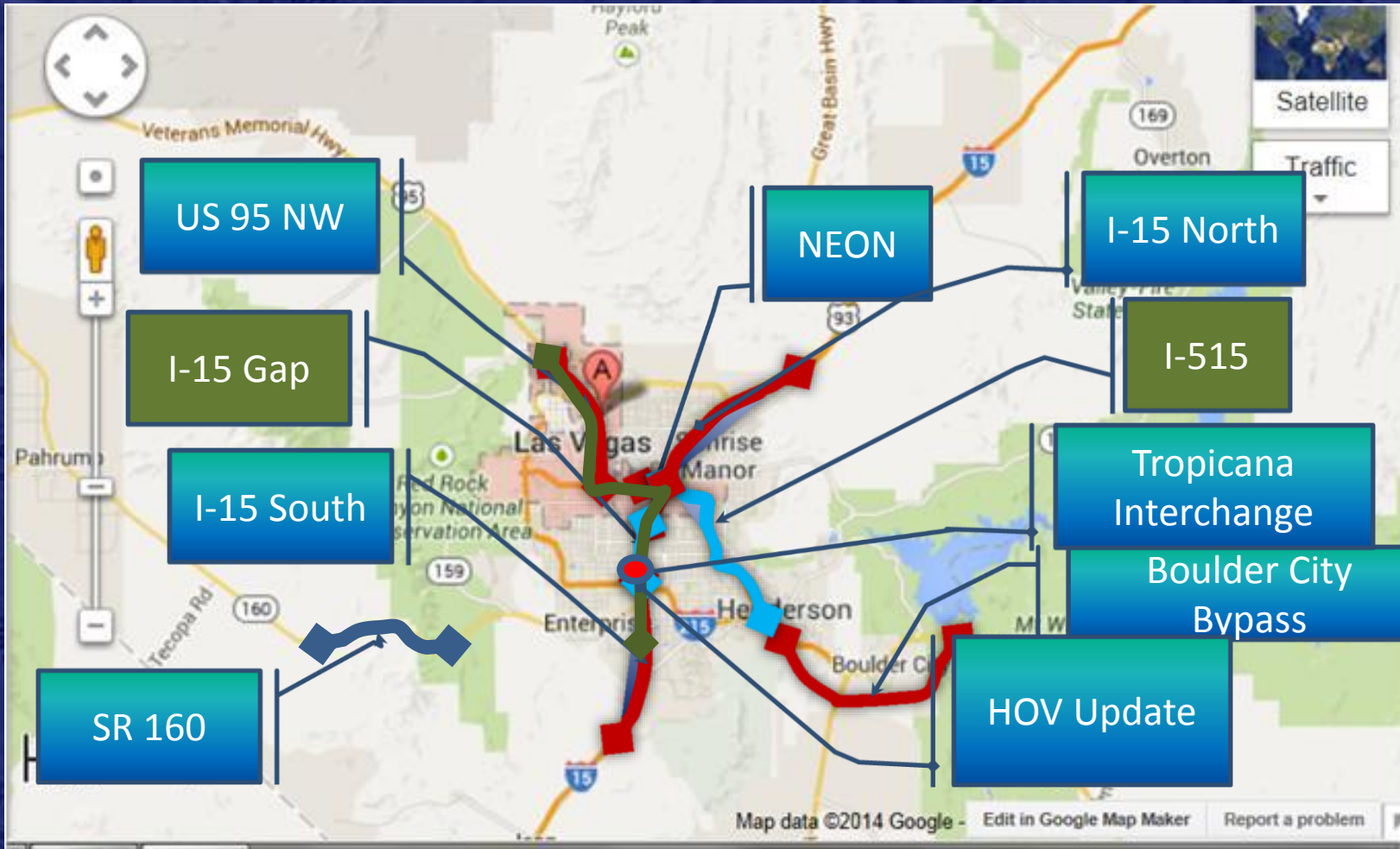
Active

- Boulder City Phase II – DB
- Mesquite DB
- Tropicana ADA
- Tropicana Escalators
- Verdi Bridges – Bridge Scour
- Airport Connector
- McCarran/Pyramid Intersection
- Regional Traffic Modeling
- 515 Stephanie
- 515 Horizon
- US-50 Bypass

Somewhat Active

- Ivanpah Airport
- Desert Xpress
- Wadsworth Bypass
- Geiger Grade Realignment
- Sheep Mountain Pkwy

Clark Projects



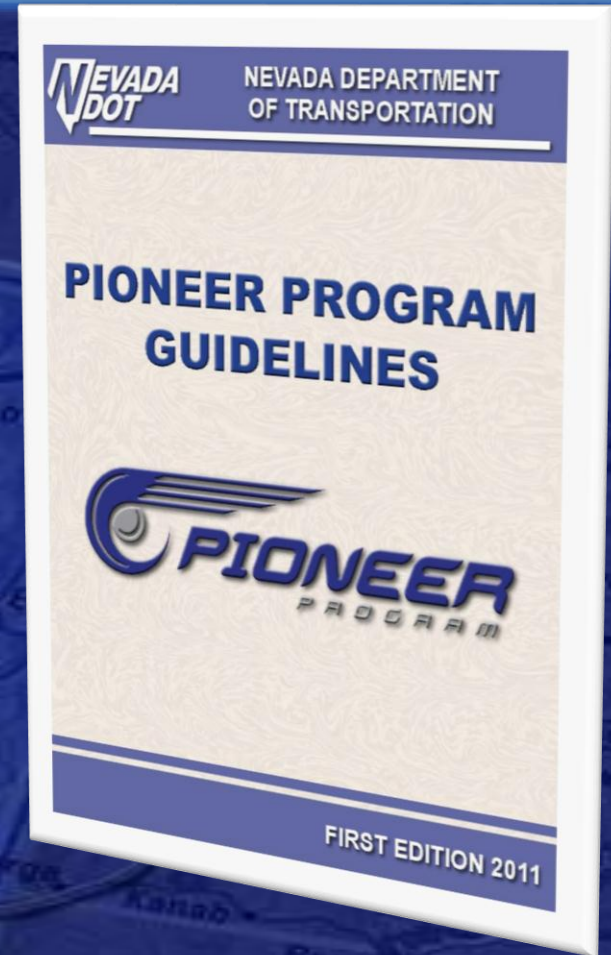


PIONEER PROGRAM

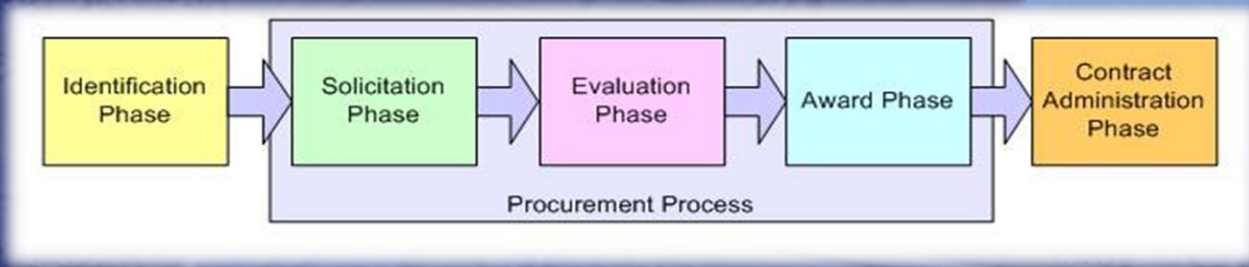


NDOT Pioneer Program Guidelines

- Provides a framework, general process, and structure for the implementation of DB and CMAR contracts
 - Procurement process
 - Design process
 - Contract administration process



Procurement Process



➤ Design Build (NRS 408):

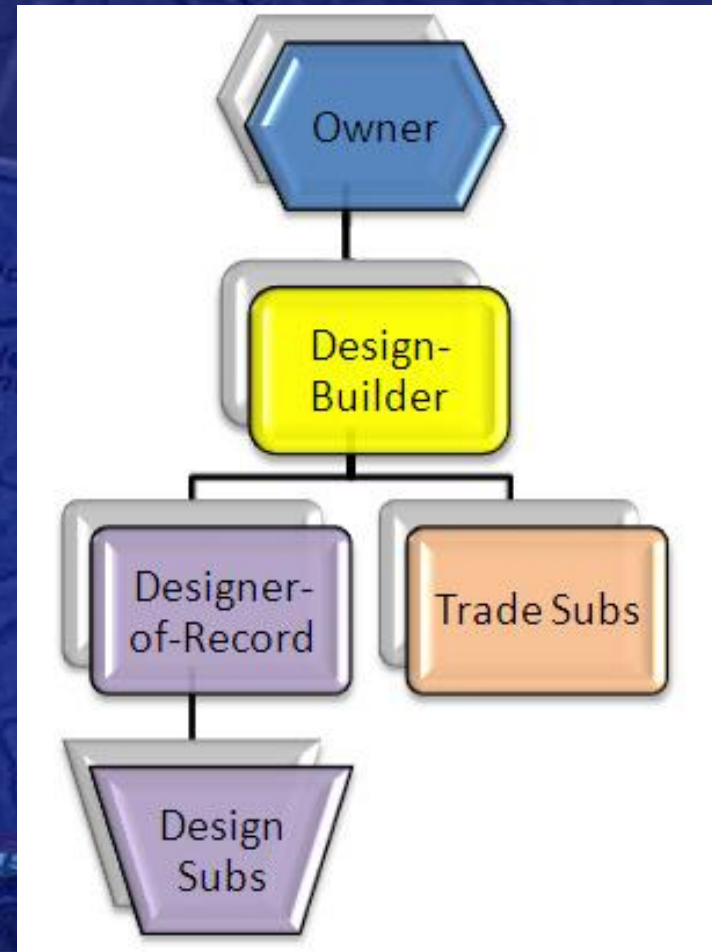
- Two Step procurement process:
 - RFQ and RFP
- Qualification selection is based on designer, contractor and subs experience and qualifications (establish a short list of qualified DB teams)
- Short listed firms submit proposals
- Award on Best Value basis
 - Combination of price, technical concepts and schedule

➤ CMAR (NRS 338)

- One step procurement process:
 - RFP
- Contractors submit proposals
- Award is (typically) based on Contractor's past experience and qualifications (NDOT may hire ICE and Designer through separate procurement process)
- Award of pre-construction services based on qualifications
- Award of construction contract based on GMP

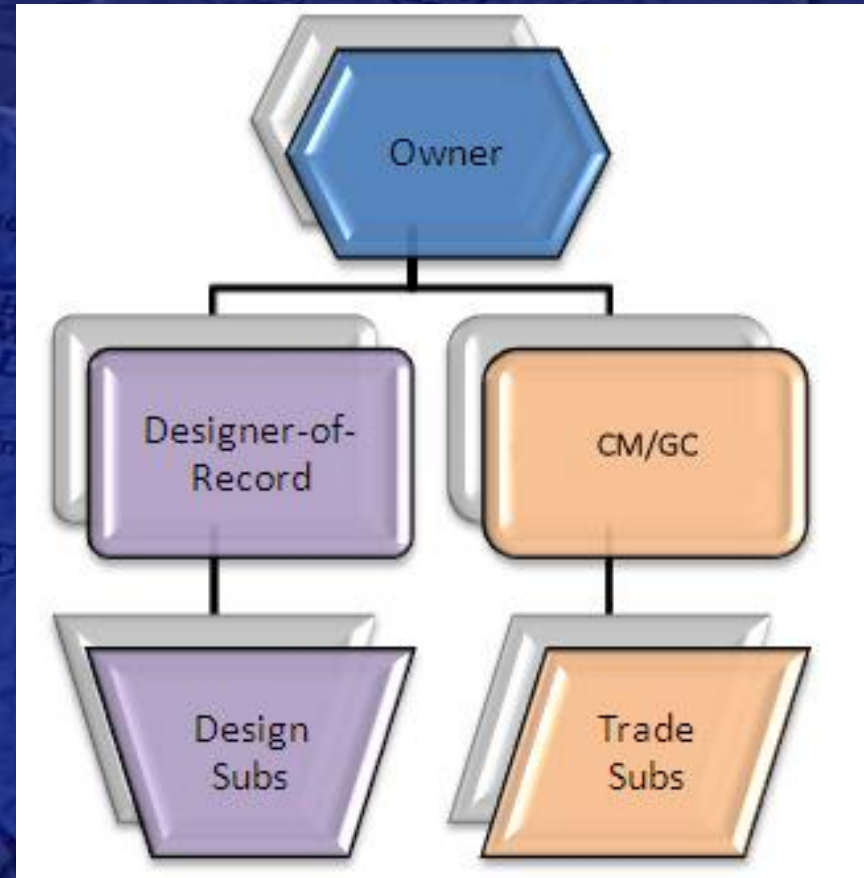
Contract Administration – DB Design Process

- NDOT defines minimum standards for design and construction
- Contractor(s) identify innovation through ATC process
- the design-builder assumes responsibility for the final design work
- NDOT reviews and approves design submittals



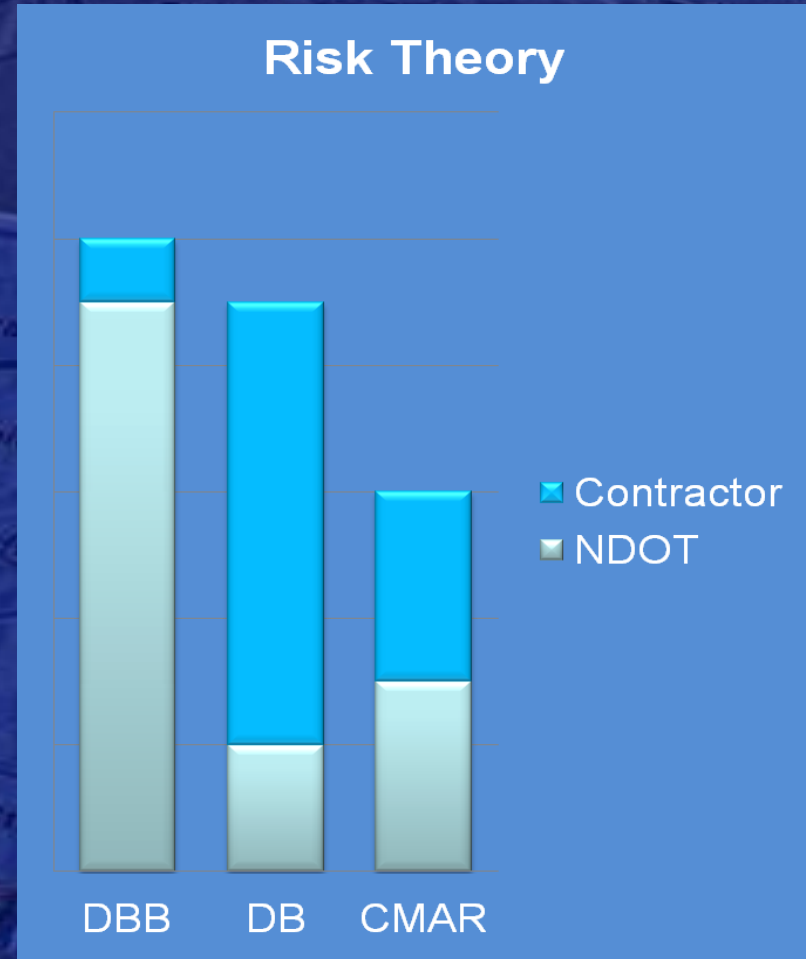
Contract Administration CMAR (CMGC) Design Process

- CMAR assist the NDOT and Design Service Provider in the design of a Project during preconstruction
 - Identifies construction innovation
 - Design and construction risks are identified and quantified

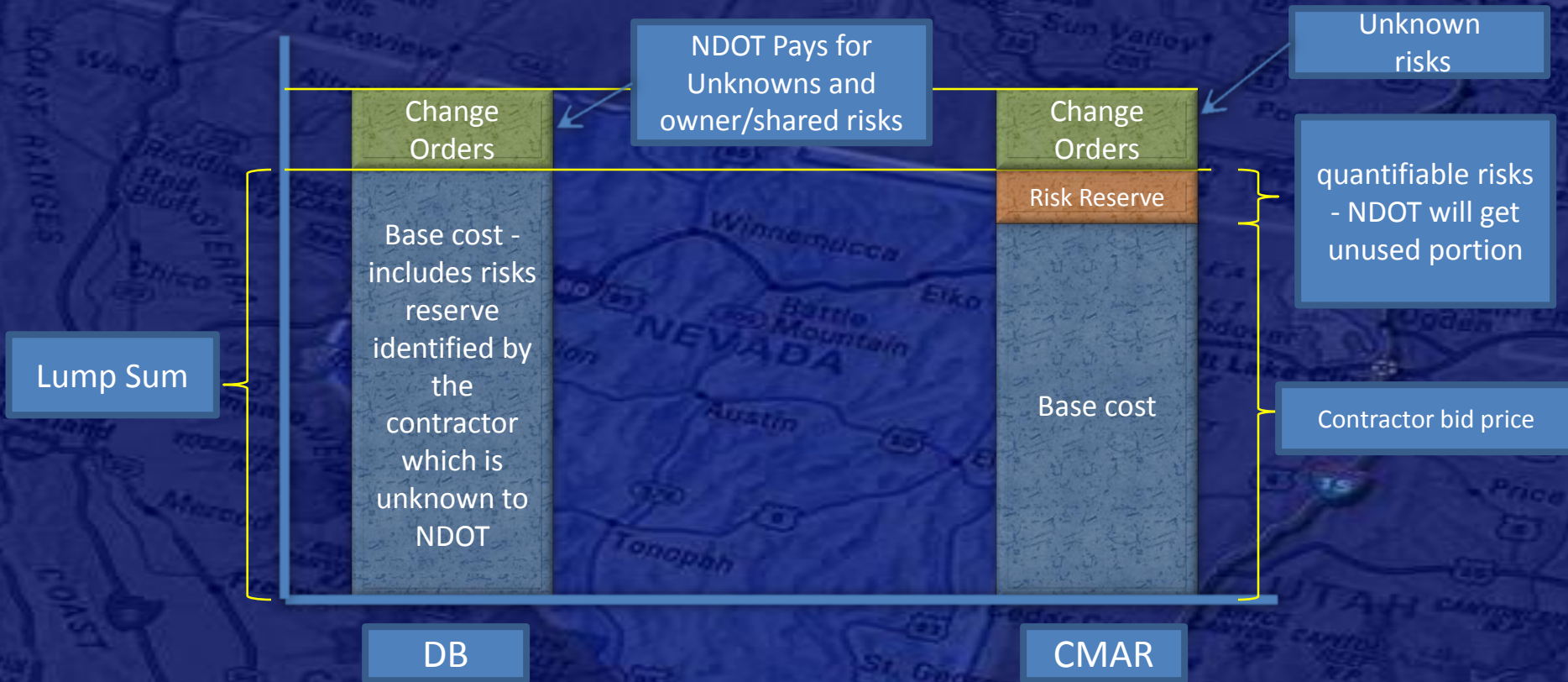


Risk Allocation

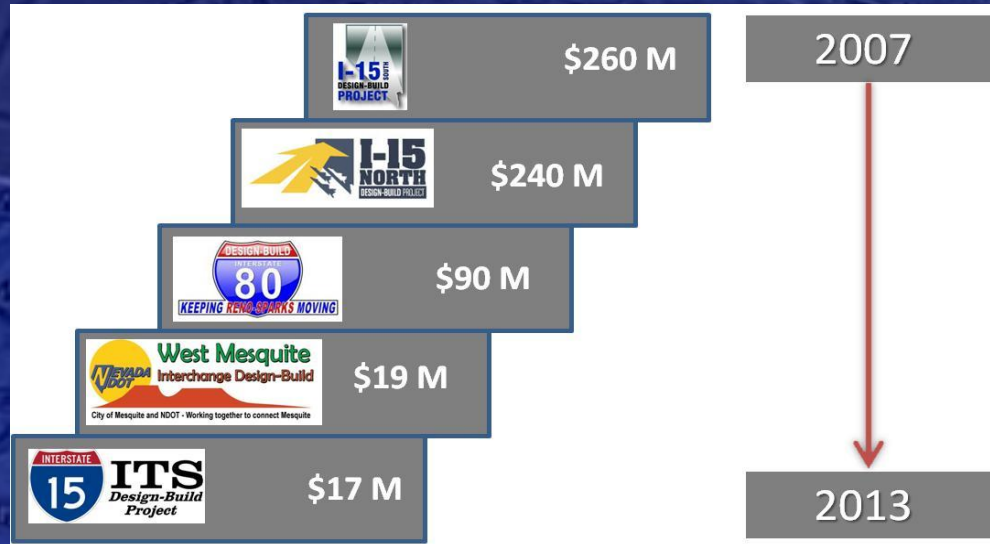
- Risk allocation is an essential element of innovative delivery projects (DB, CMAR and DBFOM)
- Innovative delivery provides flexibility in risk allocation – Keeping, sharing or transferring risks that traditionally are borne by NDOT



Risk Distribution – DB & CMAR



DB Projects



\$540 - \$ 580

Total estimated cost: ~ 1 Billion



\$70 - \$80

Total estimated cost: > \$100 Million

CMAR Projects

➤ Completed:

- Moana DDI
- Tahoe Bike Path
- Carlin Tunnels
- Kingsbury Grade

➤ Design Phase

- Tropicana Escalators

➤ Procurement Process

- Verdi Bridges
- Tropicana ADA





Performance

INNOVATIVE DELIVERY - DB



Schedule

Design-Build Project	Time between NEPA Approval and Start of Construction	Time finished ahead of Design-Bid-Build Schedule
I-15 North	6 months	1 year
I-15 South	7 months	1.5 years
I-80	6 months	6 months
Mesquite	1 month	6 months
I-15 ITS	1 month	9 months

Innovation

Design-Build Project	Total ATCs	ATCs Used	Example Innovation
I-15 North	27	5	Lake Mead Interchange Traffic Management
I-15 South	37	14	Blue Diamond Fly-Over In-Place Bridge Construction
I-80	67	10	Traffic Management Auxiliary Lanes ITS/Ramp Meters
Mesquite	30	4	Accelerated Bridge Construction (ABC)
I-15 ITS	10	1	Combination of Wireless & Fiber Solutions



Performance

INNOVATIVE DELIVERY - CMAR



Program Performance - Innovation

Innovation Performance			
Project	Construction Cost		Estimated Direct Savings ¹
Moana DDI	\$	6,978,978.00	\$ 1,544,498.00
Tahoe Bike Path	\$	1,424,013.00	\$ 275,000.00
Carlin Tunnels	\$	31,158,944.13	\$ 2,790,000.00
Kingsbury Grade	\$	14,877,619.20	\$ 7,345,000.00
Tropicana Escalators		TBD	TBD
Total	\$	54,439,554.33	\$ 11,954,498.00
Total Savings as Percent of Construction Price			21.96%
1 – Based on proposed innovations and savings recognized during design			

Program Performance - Schedule

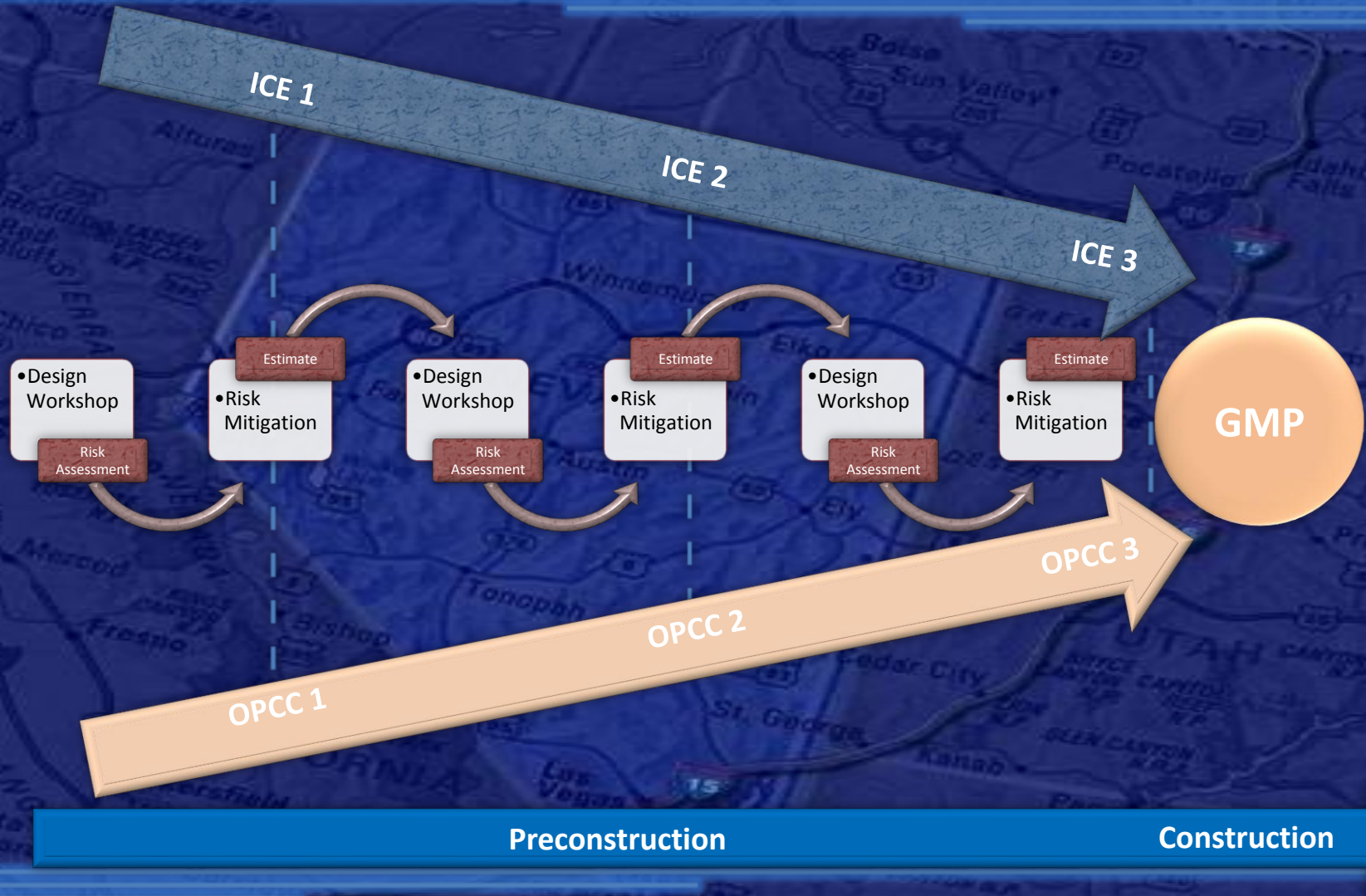
Schedule Performance: Design and Construction Duration									
	CMAR Schedule			DBB Estimated Schedule			% Time Savings ²		
	Design ¹	Construction	Total	Design ¹	Construction	Total	Design ¹	Construction	Total
Moana DDI	5 months	3 months	8 months	8 months	8 months	16 months	37.5%	62.5%	50.0%
Tahoe Bike Path	6 months	2 months	8 months	8 months	9 months	17 months	25.0%	77.8%	52.9%
Carlin Tunnels	5 months	16 months	21 months	8 months	24 months	32 months	37.5%	33.3%	34.4%
Kingsbury Grade	8 months	7 months	15 months	8 months	29 months	37 months	0.0%	75.9%	59.5%
Tropicana Escalators				18 months	18 months	36 months			

1 – Design Period begins at procurement of CMAR contractor: 2 – See equation

Program Performance – Final Bid Prices

Final Bid	CMAR Contractor's Bid	Independent Cost Estimate (ICE)	Engineer's Cost Estimate (EE)	% Diff. between Bid/ICE	% Diff between Bid/EE
Moana DDI	\$ 6,978,978.00	\$ 6,921,047.31	\$ 6,962,832.29	0.83%	0.23%
Tahoe Bike Path	\$ 1,424,013.00	\$ 1,470,128.18	\$ 1,520,491.14	-3.24%	-6.78%
Carlin Tunnels	\$ 31,158,944.13	\$ 31,276,349.29	\$ 28,606,559.54	-0.38%	8.19%
Kingsbury Grade	\$ 14,877,619.20	\$ 14,830,500.57	\$ 14,101,765.99	0.32%	5.21%
Tropicana Escalators	TBD	TBD	TBD		

CMAR Process



Pre-Construction Costs

Cost Performance: Preconstruction Cost

	CMAR Design Fee	ICE Services Fee	Construction Cost ¹	CMAR Fee as % of Const. Cost	ICE Fee as % of Const. Cost
Moana DDI	\$ 335,160.49	\$ 193,100.00	\$ 6,978,978.00	4.80%	2.77%
Tahoe Bike Path	\$ 97,457.91	\$ 120,704.70	\$ 1,424,013.00	6.84%	8.48%
Carlin Tunnels	\$ 265,500.00	\$ 271,700.00	\$ 31,158,944.13	0.85%	0.87%
Kingsbury Grade	\$ 237,750.00	\$ 123,946.09	\$ 14,877,619.20	1.60%	0.83%
Tropicana Escalators	TBD	TBD	TBD	TBD	TBD
Total	\$ 935,868.40	\$ 709,450.79	\$ 54,439,554.33	1.72%	1.30%

1 = Cost includes Risk Reserve expenditures

Program Performance - Risk

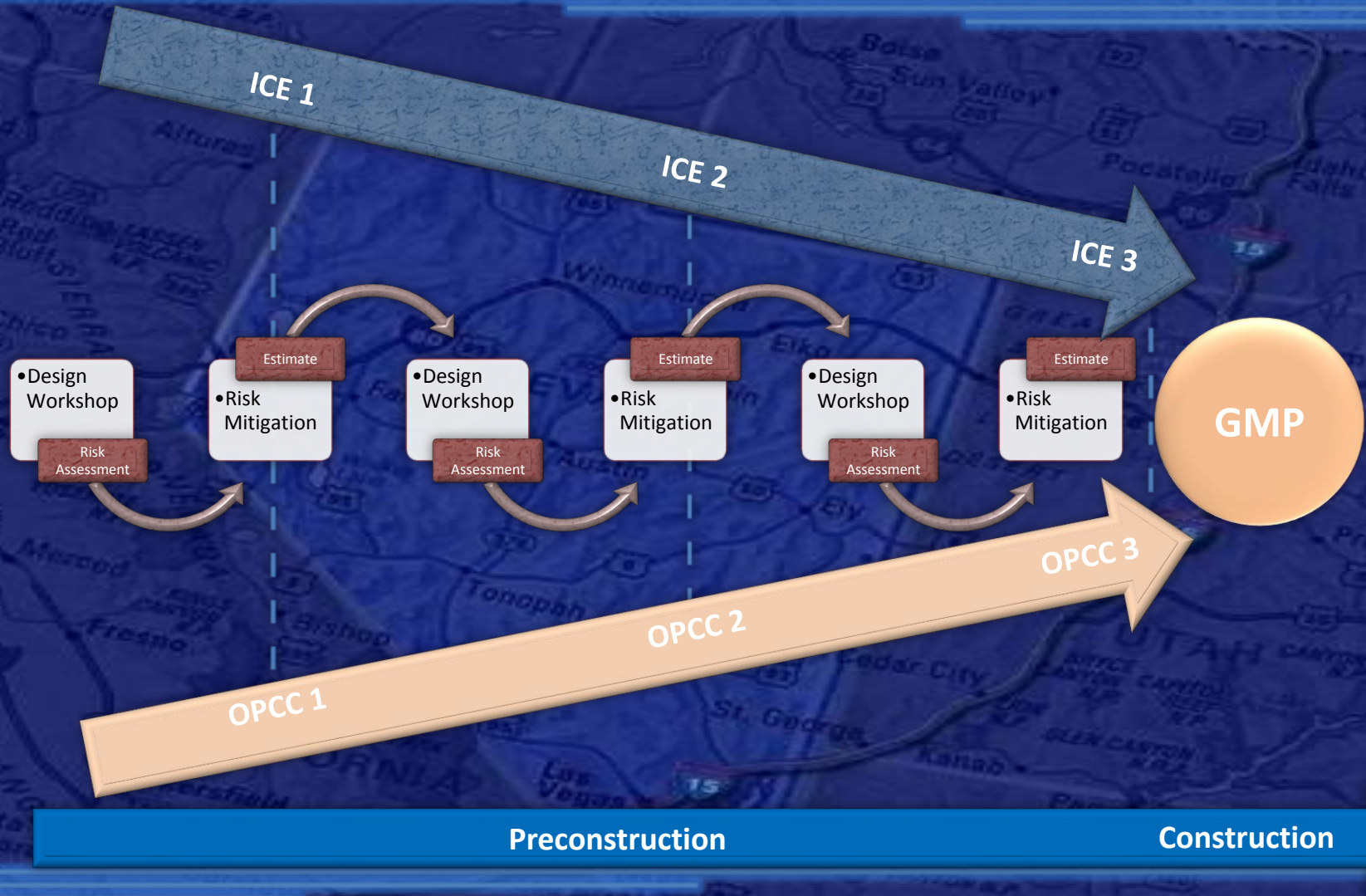
Projects	Construction Cost	Risk Reserve		Risk Reserve %		DBB Contingency ¹
		Proposed	Applied	Proposed	Applied	
Moana DDI	\$ 6,978,978.00	\$ 280,000.00	\$ 227,230.52	4.01%	3.26%	5.00%
Tahoe Bike Path	\$ 1,424,013.00	\$ 66,000.00	\$ 4,030.00	4.63%	0.28%	7.00%
Carlin Tunnels	\$ 31,158,944.13	\$ 630,000.00	\$ 374,808.97	2.02%	1.20%	3.00%
Kingsbury Grade	\$ 14,877,619.20	\$ 1,850,000.00	\$ 250,000.00	12.43%	1.68%	5.00%
Tropicana Escalators	TBD	TBD	TBD	TBD	TBD	
Total	\$54,439,554.33	\$ 2,826,000.00	\$ 856,069.49	5.19%	1.57%	

1 – NDOT Project Estimation Manual, Oct. 2012

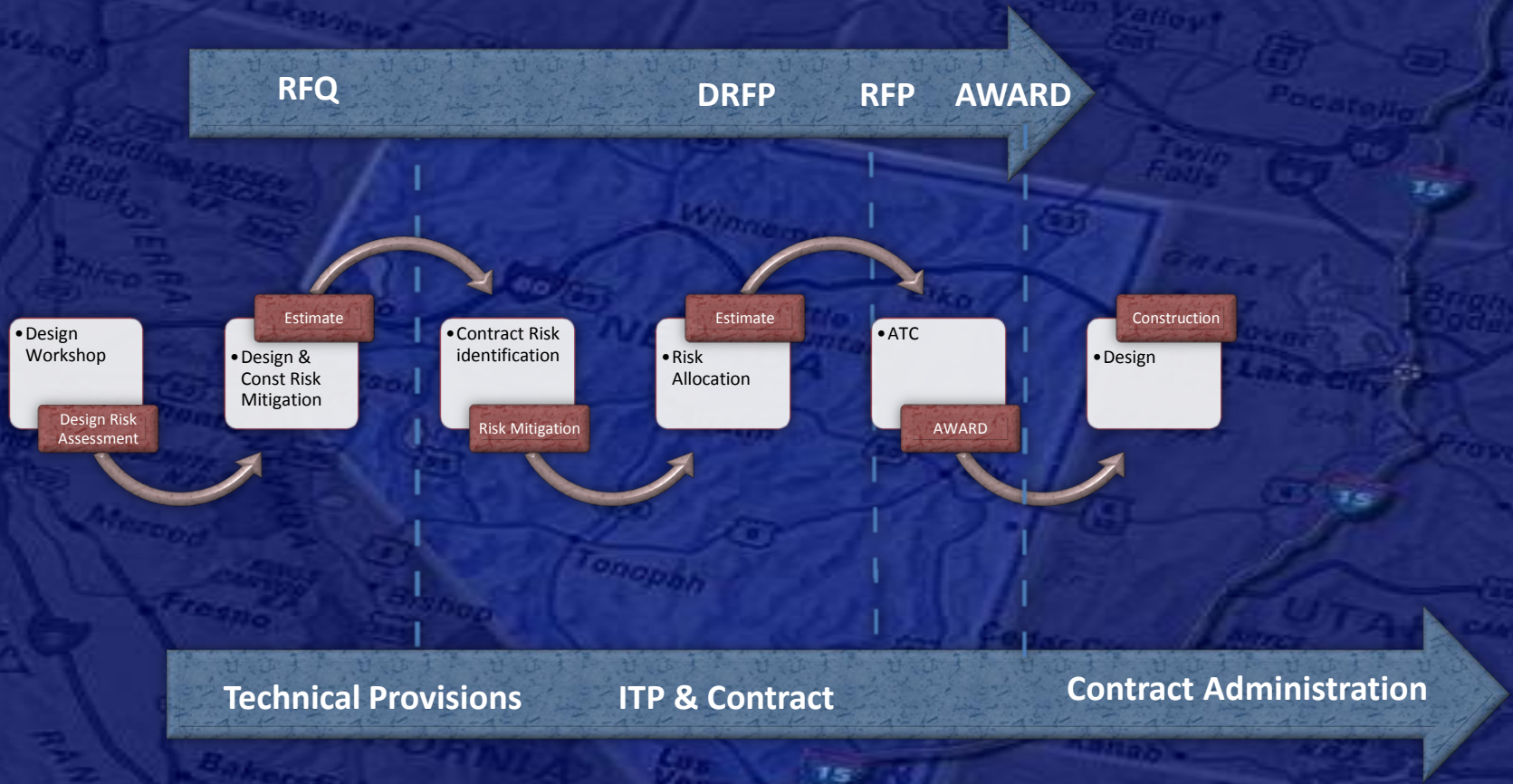
A map of Nevada is shown with a semi-transparent blue overlay. The word "Questions?" is written in large, white, sans-serif font in the center of the map. The map shows major cities, highways, and geographical features like the Sierra Nevada and Great Salt Lake. The word "NEVADA" is visible at the bottom of the map area.

Questions?

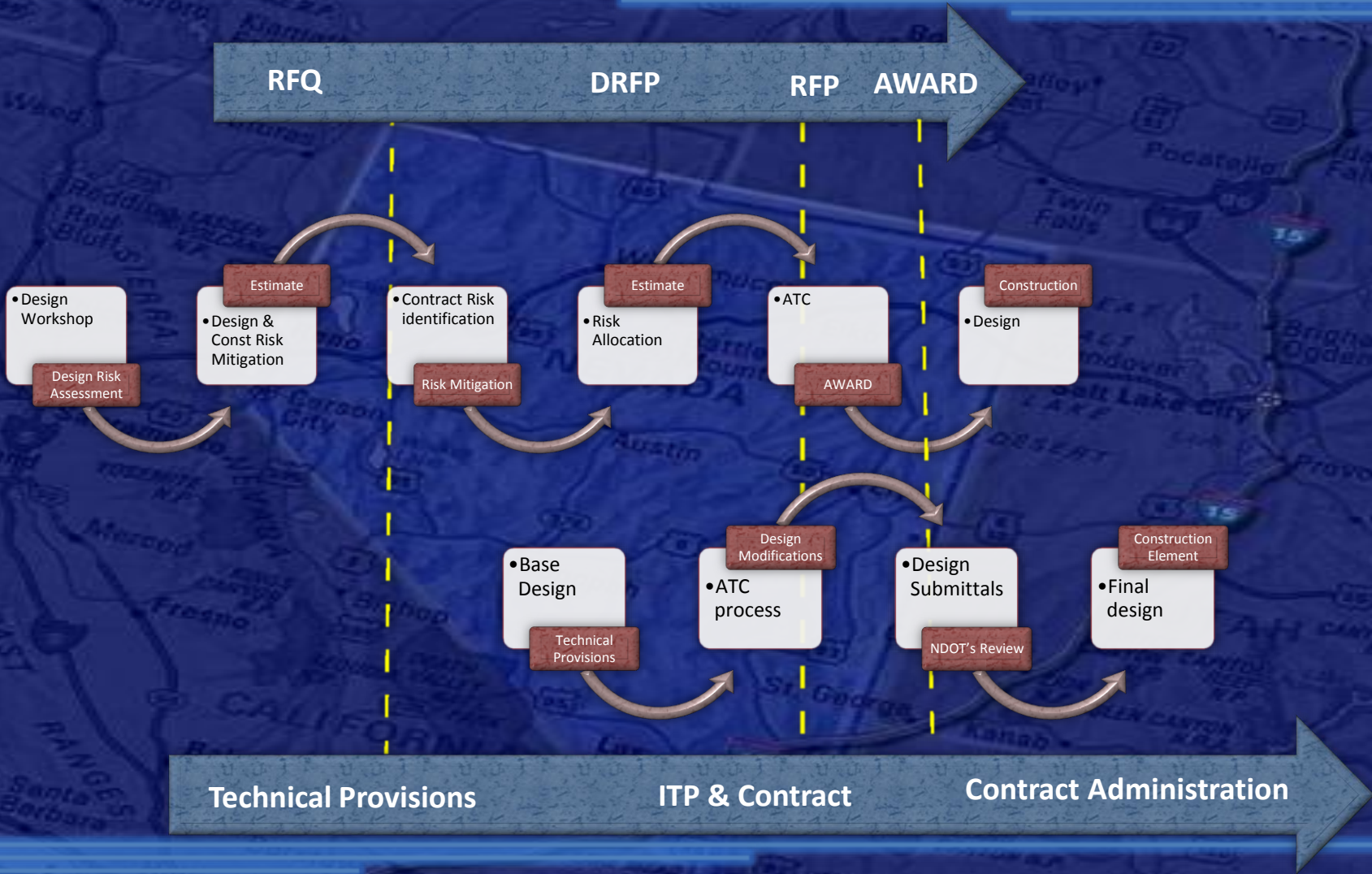
CMAR Process



DB Process



DB Process



CMAR Process

