

TECHNICAL SESSION

FLEX LANES AND DEPORTED LANE CONTROL SYSTEMS:

Expanding Corridor Capacity,
Efficiency, and Safety Through
Intelligent Operations

Orange traffic⁺



ITS-NY

Intelligent Transportation Society of New York





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A G E N D A

- The Challenge: Growing Traffic & Corridor Constraints
- How Flex Lanes Work (Operations & Safety)
- Case Study: Utah Pioneer Crossing
- Benefits: Travel Time, Efficiency & Sustainability

***Can Flex Lanes significantly
increase the capacity of major
road corridors across North
America?***

Orangetraffic+





Orange traffic⁺

- Founded in **1988**
- **100 +** Major projects
- 25,000 **LED Signs**
- Operating in **Canada** and the **United States**, with 15 North American distributors
- Serving **mobility** and road **infrastructure** owners
- Specialized in the design, manufacturing, distribution, integration, and maintenance of various **intelligent transportation systems (ITS) equipment and systems**
- **MISSION:** Making our roads **safer**, more **efficient**, and more **sustainable**



EXPERTISE



DYNAMIC SIGNALING



FIELD MONITORING



CONTROL & MANAGEMENT

TRAFFIC ISN'T JUST CONGESTION. IT'S TIME... LOST.

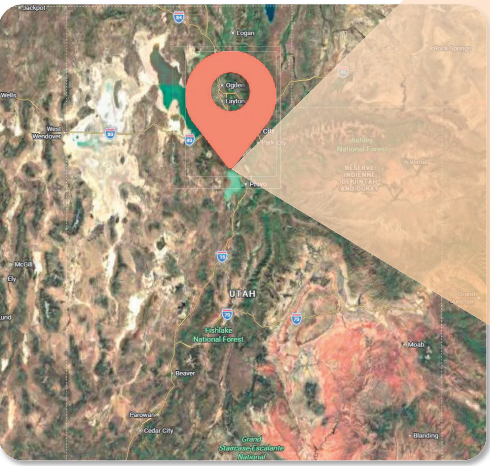
6 minutes per trip...
becomes 60+ hours per year
— per driver.



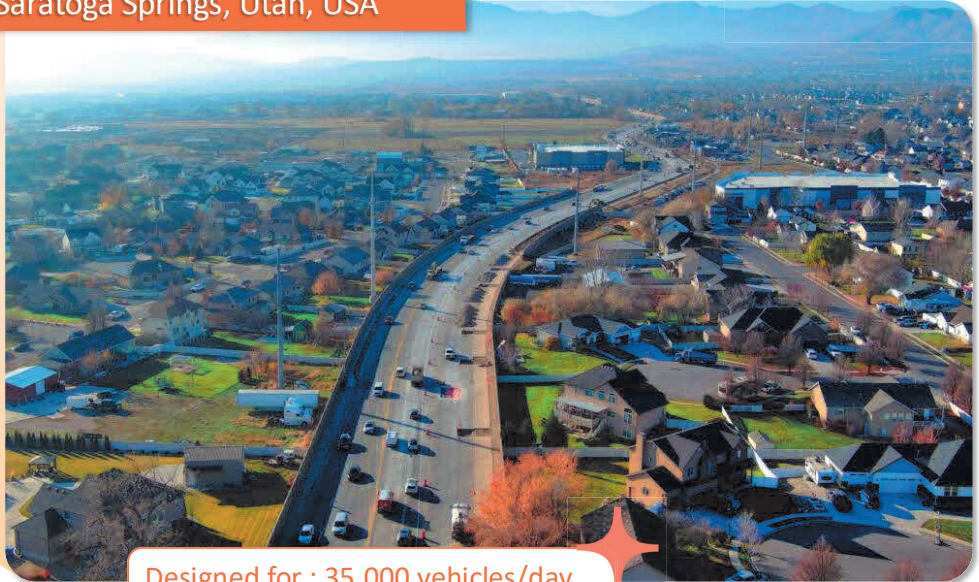
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THE REALITY OF GROWTH

Our corridors weren't built for today's demand



Pioneer Crossing
Saratoga Springs, Utah, USA



Designed for : 35,000 vehicles/day
Now carries : 55,000+ vehicles/day



THE LIMITS OF TRADITIONAL SOLUTIONS

We can't build our way out
of congestion

ROADWAY WIDENING

HIGHER COSTS

TIME-CONSUMING

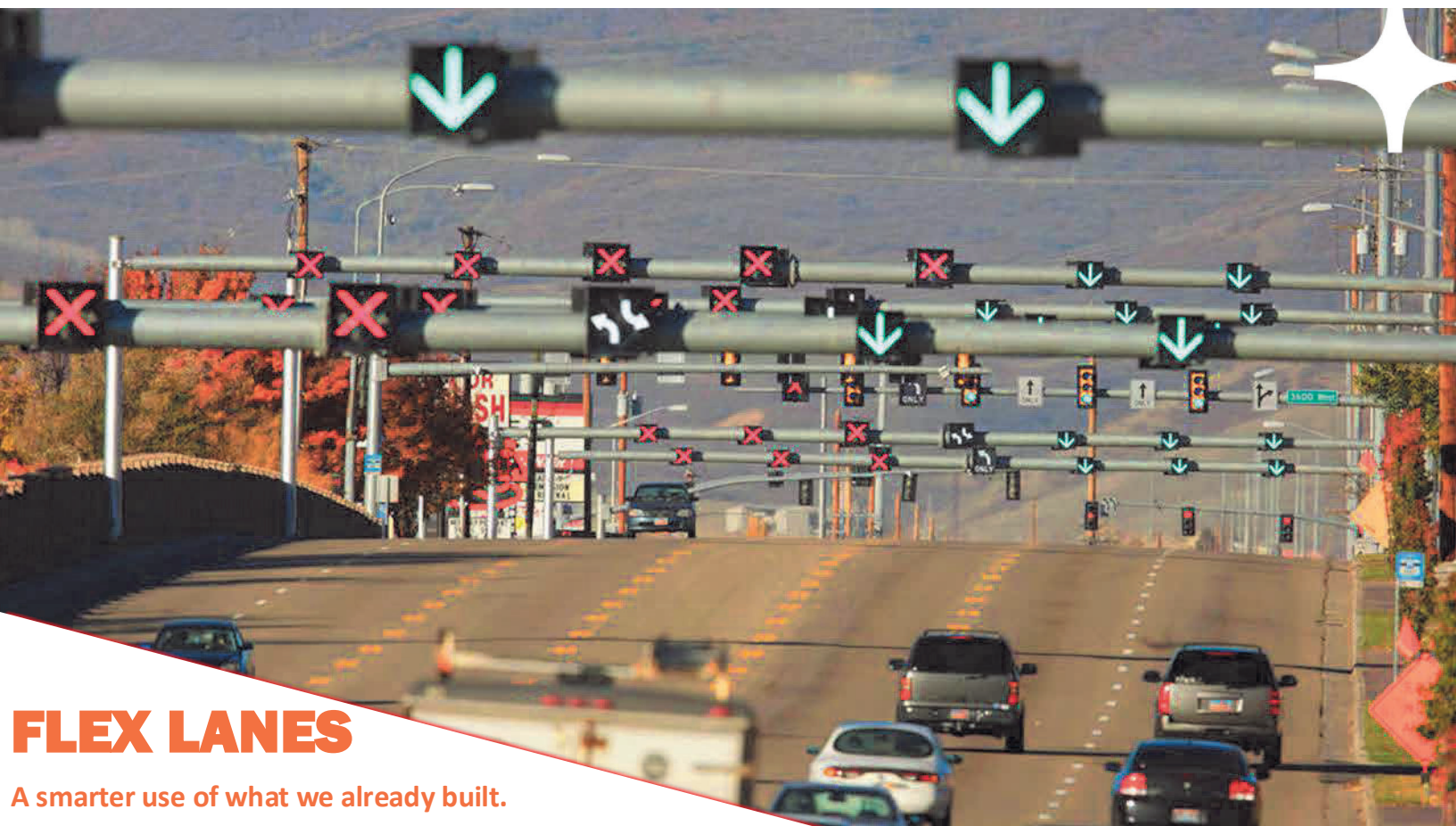
INDUCED DEMAND

URBAN
CONSTRAINTS



“Traffic isn’t static. But infrastructure is.”

So how do we increase capacity... without building more roads?



FLEX LANES

A smarter use of what we already built.

WHAT ARE FLEX LANES ?

Reversible lanes that adapt to real-time demand — adding capacity in the peak direction without building new road.

1

Same footprint

Reuses existing pavement — no widening, no new right-of-way.

2

Direction shifts with demand

AM peak eastbound, PM peak westbound — lanes flow with commuters.

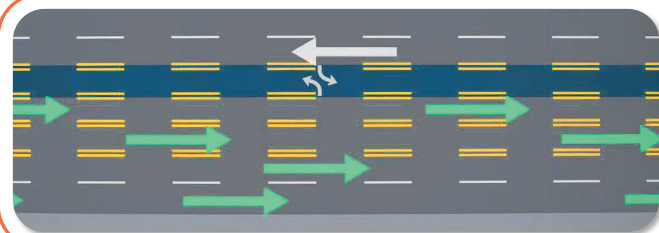
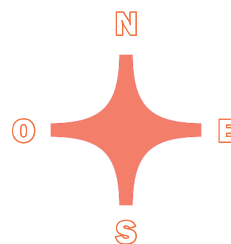
3

Overhead lane control

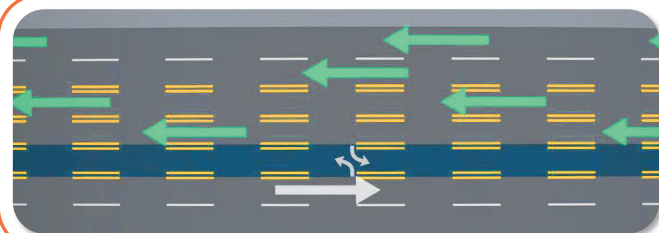
Red X closes the lane, green arrow opens it. Drivers see the change instantly.



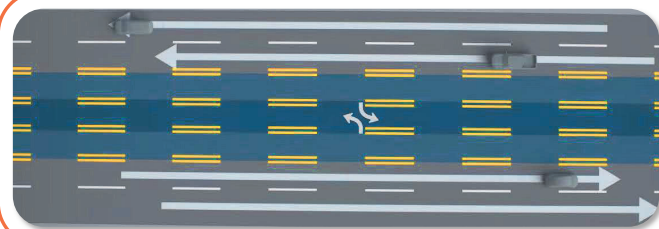
DIRECTIONAL IMBALANCE



AM PEAK • 7–9 a.m.
Added capacity eastbound
3 lanes inbound, 1 outbound



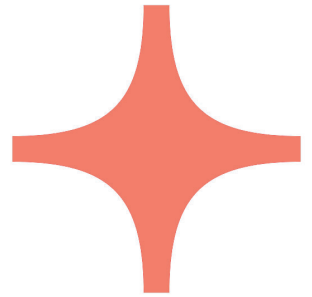
PM PEAK • 4–6 p.m.
Added capacity westbound
3 lanes outbound, 1 inbound



OFF-PEAK
Balanced flow both directions
2 lanes each direction

REAL-TIME LANE CONTROL

INSTANT, UNAMBIGUOUS LANE CONTROL.



OPEN

Lane is active in your direction.



CLEARING

Merge out — lane is about to close.



CLOSED

Do not enter — lane reversed.

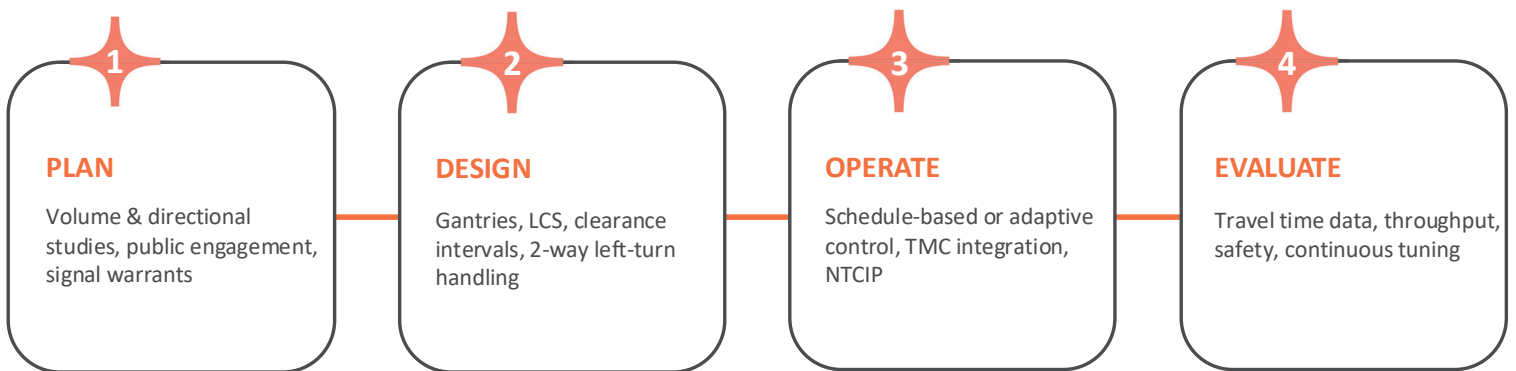


TURNING

Center turning lane.

MORE THAN HARDWARE

Flex Lanes are a **Transportation Systems Management & Operations (TSMO)** strategy — getting more from existing infrastructure through systems engineering, not concrete.



MAINTENANCE IS THE HIDDEN COST

The price tag of a Flex Lane system isn't the install — it's everything that happens over the next 20 years.



1

Repairs that require a lane closure add up

Every intervention means traffic control, bucket trucks, and crews exposed to live traffic — each closure carries its own operational and safety cost.

2

Reliability and serviceability drive the 20-year bill

Sealed enclosures, modular parts, and field-swappable components shorten every intervention and stretch the time between them.

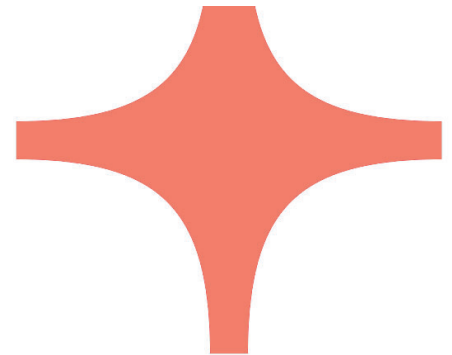
3

Where the power supply lives changes the math

Deployed power supplies — housed in roadside ITS cabinets — let crews service the system from the ground, without lifts or lane closures.

WHAT AGENCIES LOOK FOR

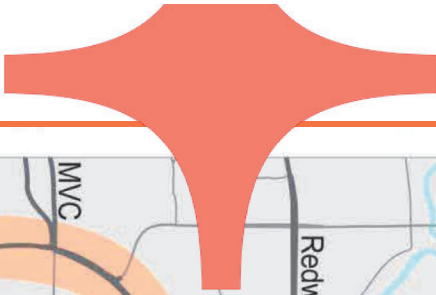
Procurement criteria — and what they look like on a real corridor.



WHAT THEY EVALUATE	HOW IT SHOWS UP IN THE FIELD
Reliability Failures create safety and liability exposure	Quick component swap Modular parts replaced in minutes, in-lane
Serviceability 20-year cost dwarfs the install	Ground-level service access Power supplies in roadside ITS cabinets — no bucket trucks
MUTCD & APL compliance Required on any public arterial	Built to MUTCD standards, listed on State APL/QPLs
Total cost of ownership The lifetime bill drives the decision	Proven Technology — simpler architecture, decades of field deployment

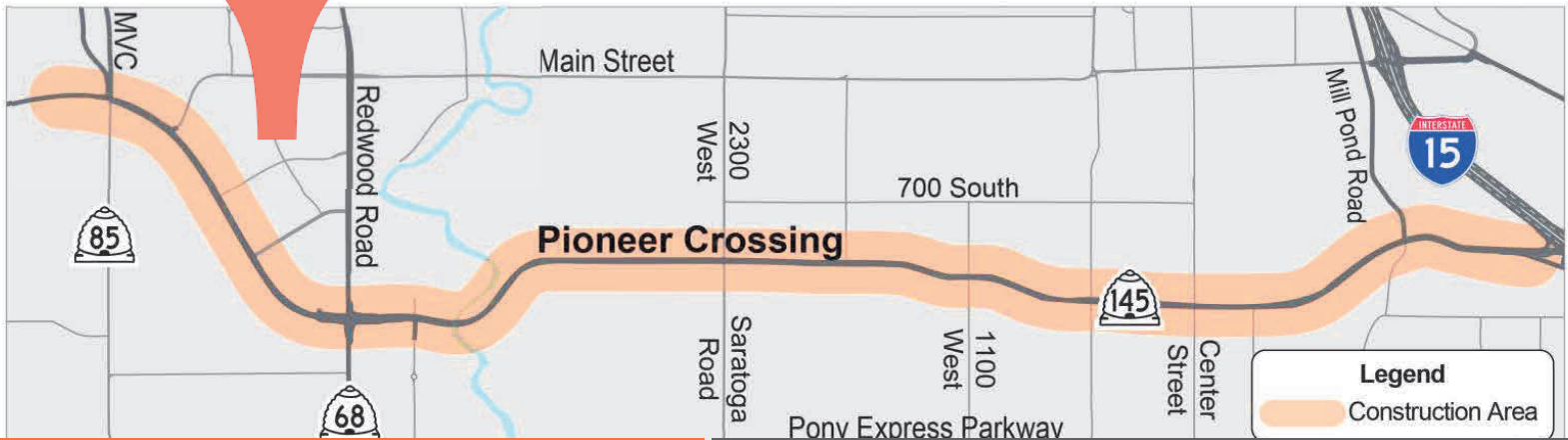
Specify for the 20-year asset, not the install.





CASE STUDY

Pioneer Crossing — Utah, USA



SR-145 · I-15 to Redwood Road · ~7 miles · Built 2010

Built for 35,000 vehicles/day. Now carrying 55,000 — every day.



55,000

vehicles/day

Built for 35,000 in 2010



+57%

over capacity

Exceeds design volume



+6 min

saved at rush hr

Per commuter, each way



+50%

capacity added

Without widening

Source: UDOT 2025 — udotinput.utah.gov/pioneer crossing

[▶ Watch corridor video](#)

CASE STUDY

PIONEER CROSSING, LEHI, UTAH

UDOT's pioneering flex-lane deployment — first corridor built with deported DVR architecture for safer, faster maintenance.



LENGTH

6.4 km

of flex-lane arterial

LANES

5

with reversible center lane

DRIVERS

100%

deported to ITS cabinet

DELIVERED

2010

first DVR-deported corridor

WHY UDOT CHOSE DEPORTED DRIVERS

- No bucket truck or lane closure needed for driver maintenance
- Safer technician access — all electronics in the ITS cabinet
- Faster troubleshooting — no overhead intervention required
- Lower lifecycle cost — no re-routing or traffic-control expenses

Source: UDOT Pioneer Crossing project | Orange Traffic deployment | SR-145, Lehi UT

CASE STUDY

5400 SOUTH CORRIDOR, TAYLORSVILLE, UTAH

MEASURABLE IMPACT

Travel times dropped on every measured movement — and the project delivered environmental gains, too.

-15%

AM eastbound

travel time, 7–9 a.m. (~45 sec)

-14%

PM eastbound

with two lanes (~50 sec)

-6%

PM westbound

on reversible lane (~20 sec)

-1.24 t

CO₂ / year

GHG saved from reduced idling

Context: 70–75% of AM traffic heads east. 60–65% of PM traffic heads west. Flex Lanes turned that imbalance into capacity.



“Smarter roads, not more roads.”

Flex Lanes + deployed control = more capacity, faster maintenance, fewer emissions — on the road you already have.





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QUESTIONS ?

Questions, discussion, and project
conversations welcome.

*Thank you,
Merci !*

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