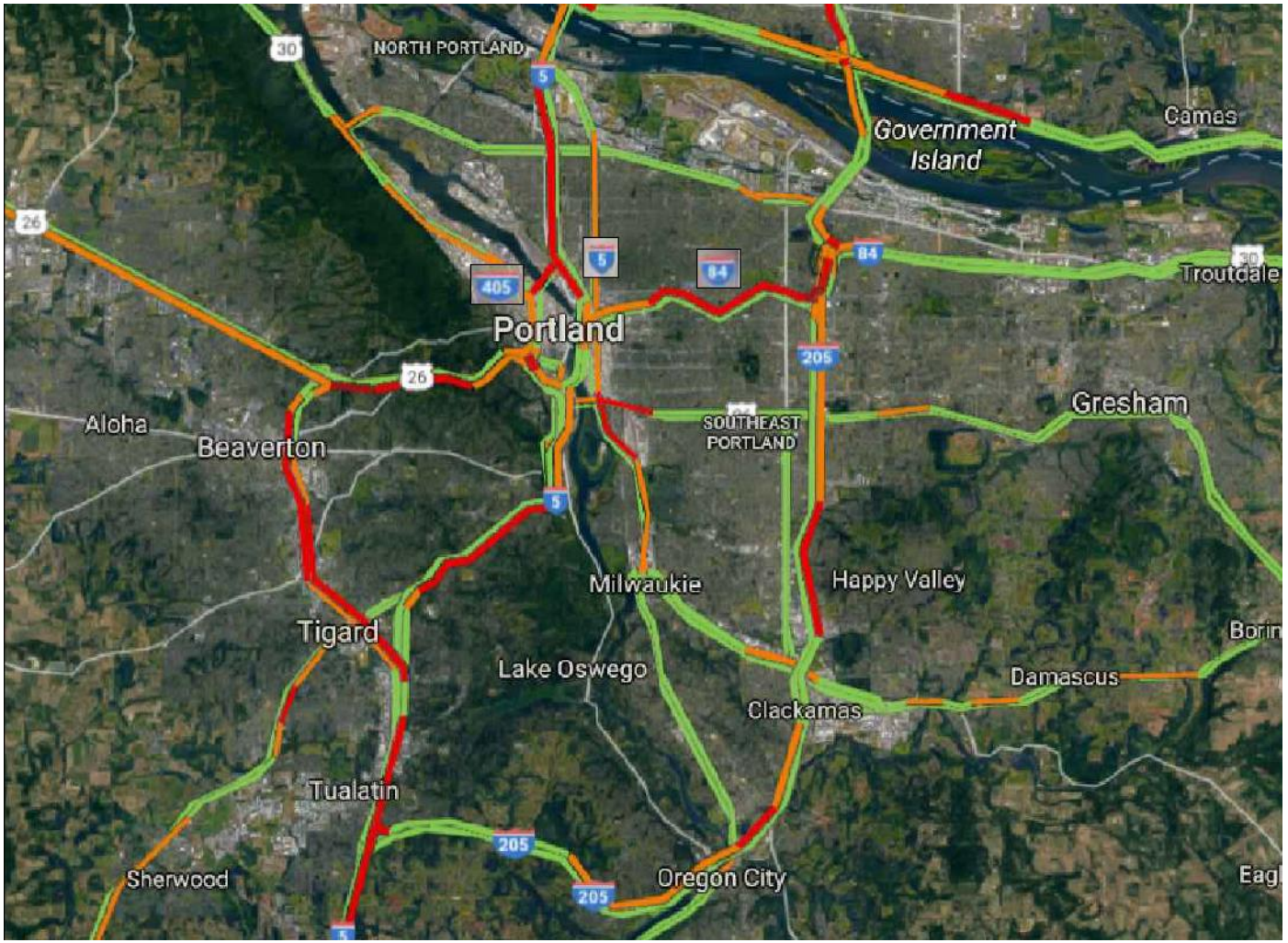
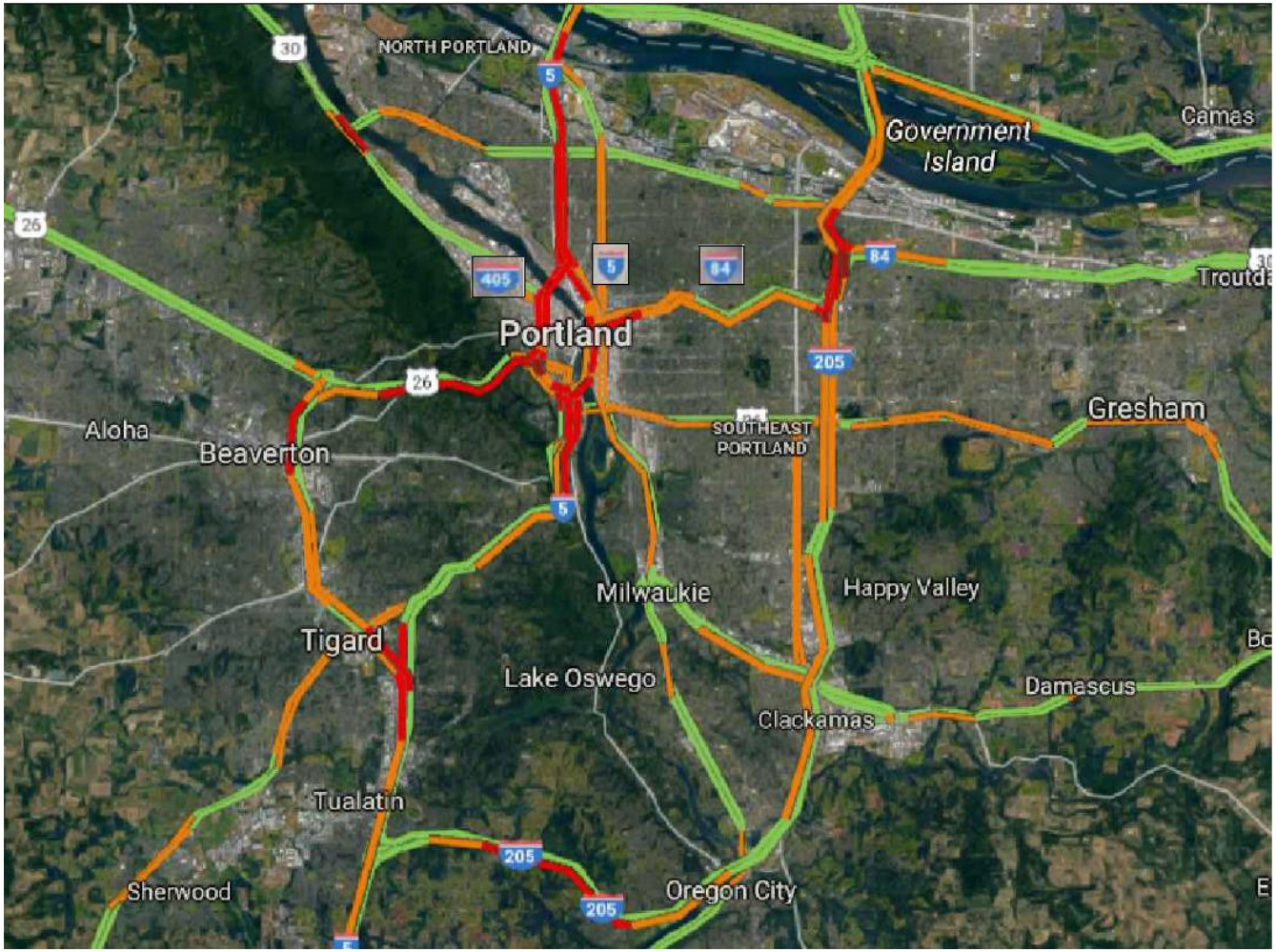
Congestion Management Solutions

Portland area morning congestion (AM)



Portland area afternoon congestion (PM)



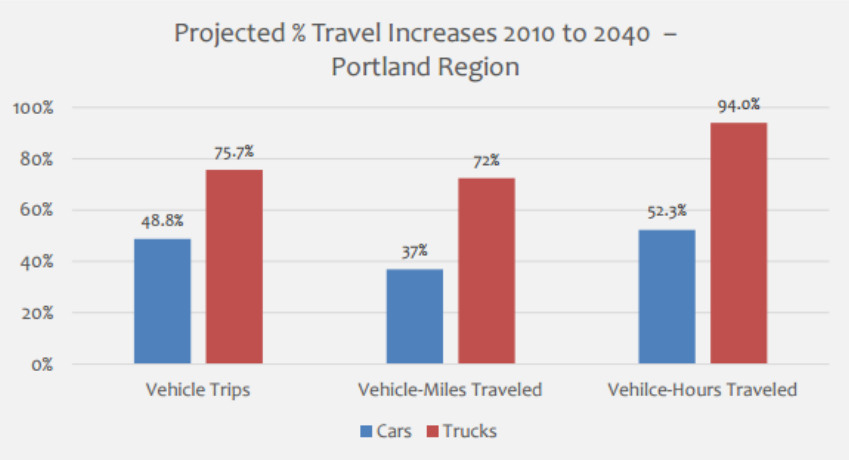
30 year planning - Portland Area

Rapid Travel Growth

Traffic is Expected to Increase Due To:

- Population Growth
- Expanding Buyer/Supplier Markets
- Globalization
- Overnight Deliveries
- Lack of Alternatives for Local Ground Transport

100% Growth over 30 years



Source: Portland Metro

Economic Development RESEARCH GROUP

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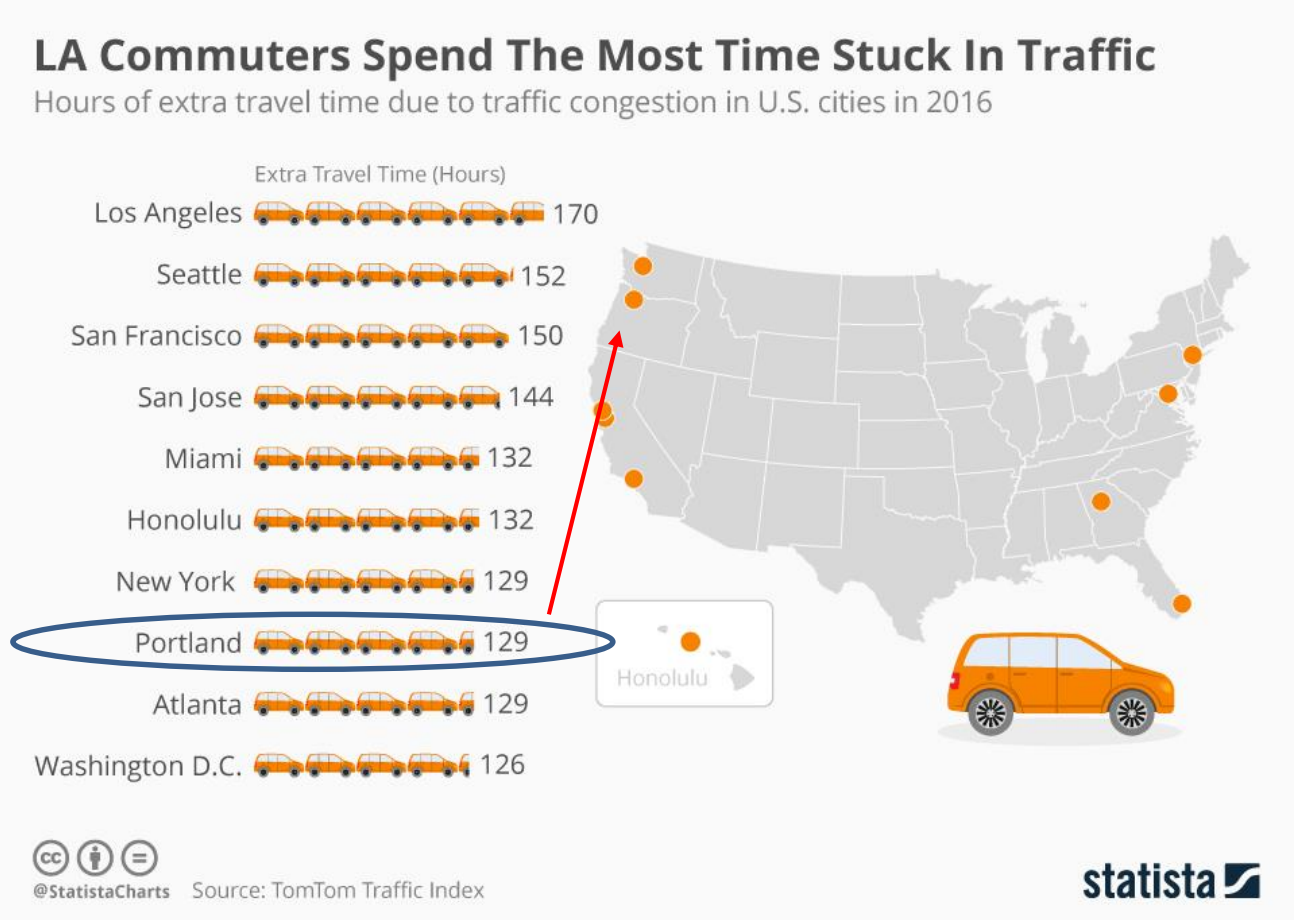
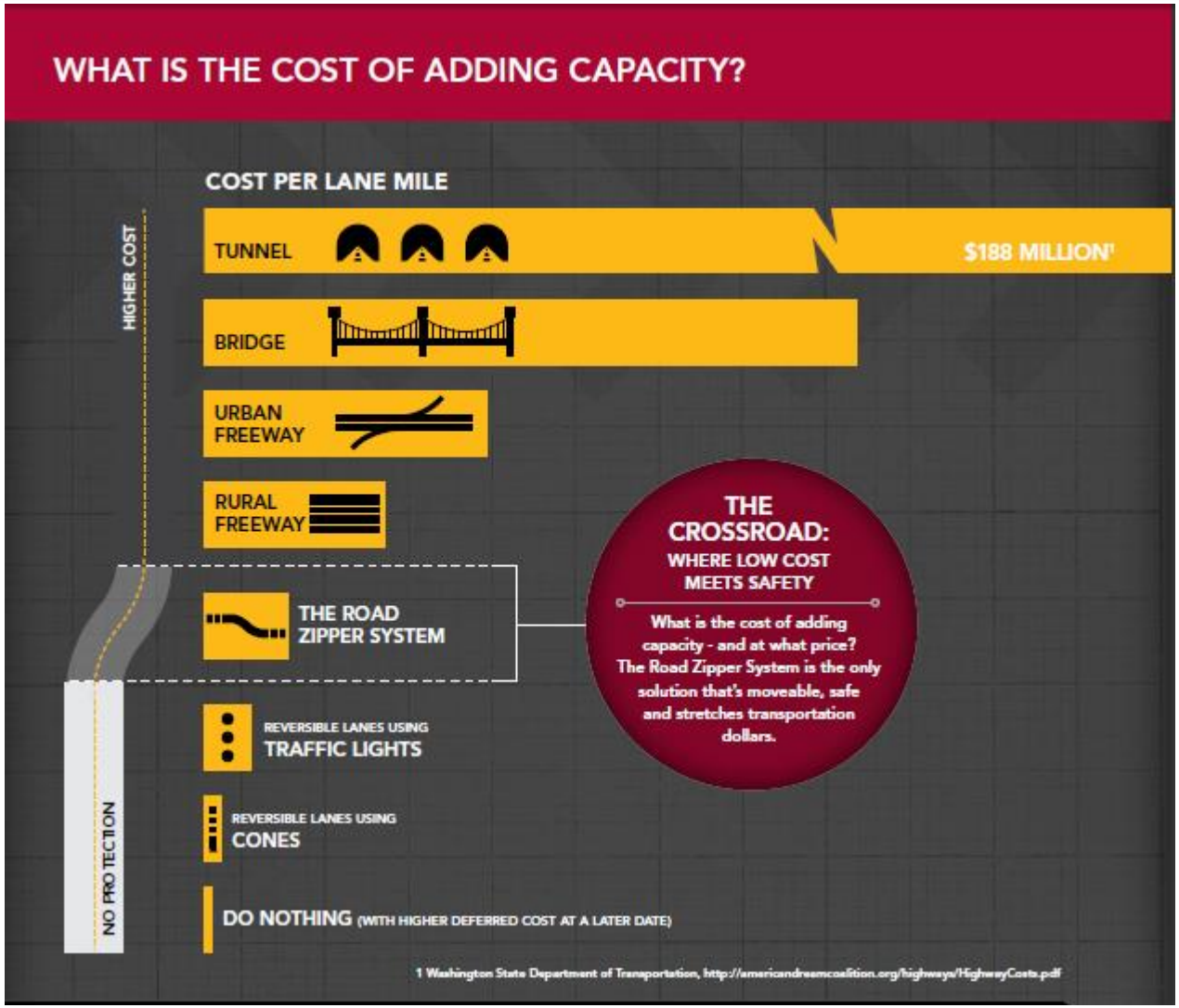
Movable Barrier technology is used in:



- Los Angeles
- San Francisco
- Honolulu
- New York
- Washington DC

Soon in Atlanta

New construction is costly



- The dollar cost of various types of construction
- The time cost and delays of
  - Funding
  - Environmental approval delays

Solution – MANY TOOLS

Lots of alternatives some old and some new

- Smart Roads
  - Real time traveler information and updates
  - Message boards and improved incident management reporting
  - Traffic control centers
- Congestion pricing – to maintain level of service
  - License plate restrictions
  - Downtown access fees (London)
- Direct Access ramps , improved merging and weaving.
- Ramp metering
- Synchronized signals
- Electronic Toll collection
- More Mass Transit including Bus rapid transit (BRT)
- Moveable barrier technology

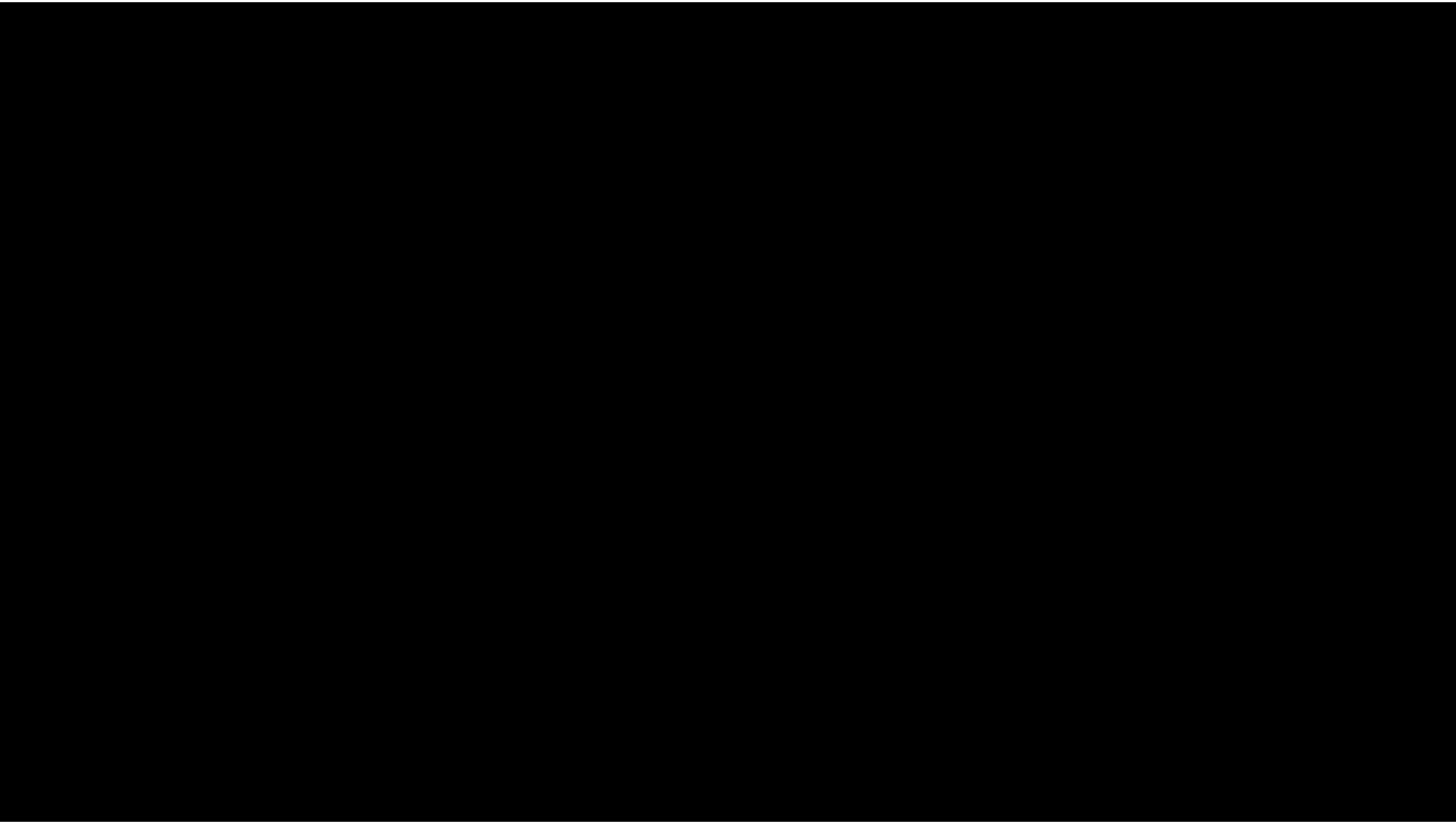
Local Portland Area Traffic

Portland Vancouver Area

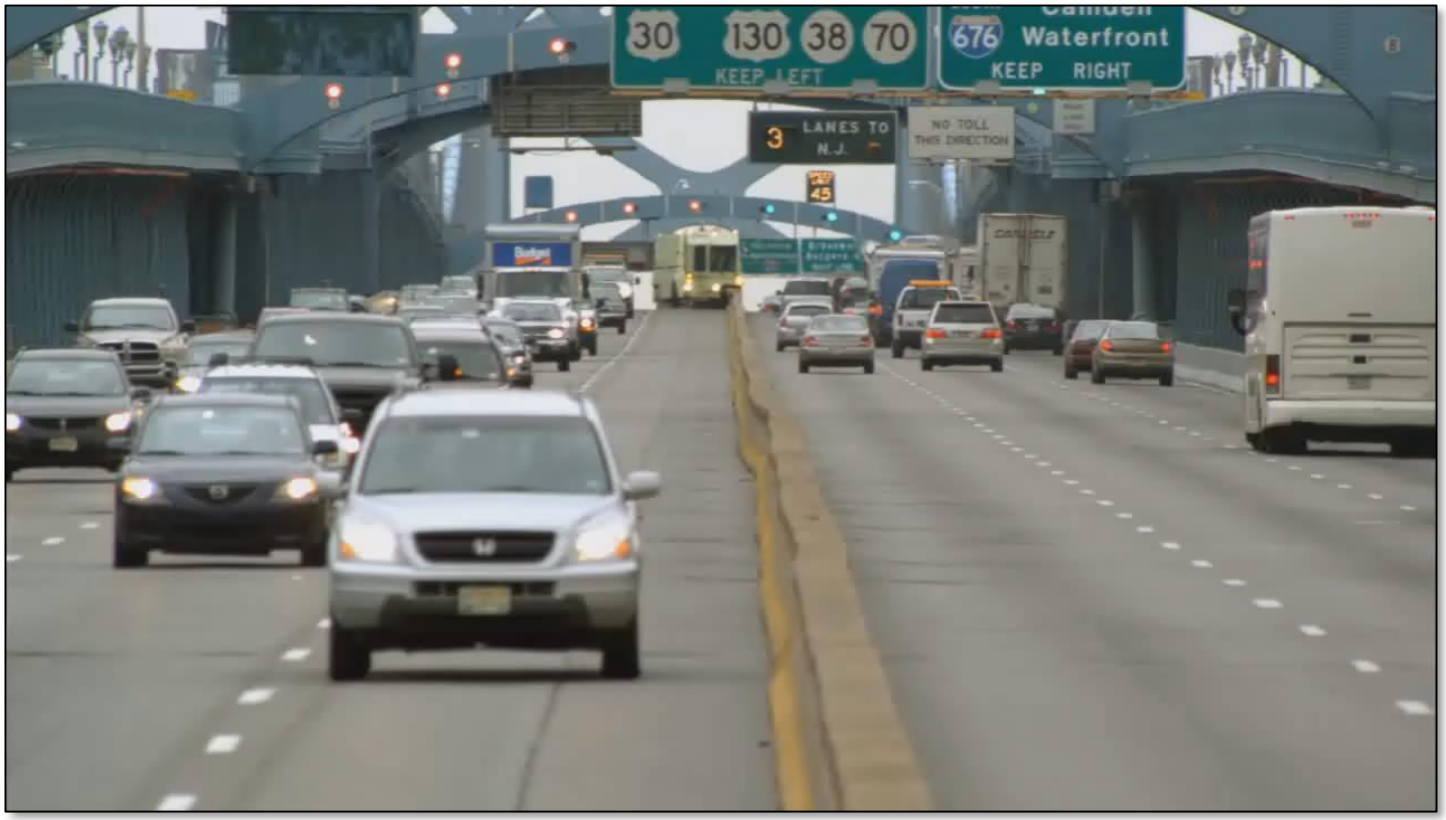
Tidal flow traffic

Unused capacity in the reverse direction

Boston I 93 Case Study



Managed Lanes: Safety and Flexibility



Moveable barrier reconfigures the roadway in real time while providing positive barrier protection between opposing traffic lanes.

Safety With Flexibility: Contraflow Lanes

H1 Honolulu Hawaii

- Reduces AM HOV commute by 25 minutes
- Increases average number of passengers per vehicle
- Greater than 10 to 1 Benefit to Cost ratio
- Increases Bus transit ridership by over 89%

Hawaii DOT Publication

Common applications

Workzones

Flexible HIghways

Urban arterials

Off-Peak Expanded Workspace Outside Shoulder Work

Off-Peak

More Workspace

Peak -Transition

More Lanes

Lane shifts under traffic, positively protecting workers, motorists & haul lanes

LIE, NY: Outside Shoulder Work

St. Croix, WI. IH-94 Bridge Reconstruction

- Type Project: Bridge Reconst.
- Contractor: Lunda Construction 04/04
- Length of Project: 2 Miles ADT: 65,000+
- Innovative Strategies: Av speed 10 mph. MCB increased speeds to 50 mph+. enabled the contractor to effectively control traffic and reduce congestion on one structure while having unobstructed access to the other structure.
- Results: Completed in 1 ~~versus~~ 2 seasons. No crossover accidents; Construction cost savings >$1 Million; User delay cost savings >$1.5 Million

Source: Rush Hour Remedy, Ayres Associates

Sydney - Victoria lane before and after Roadzipper

- Old layout was INFLEXIBLE with 3/3
- Unpredictable commutes

- Roadzipper system provides 4/2 in peak with 1 dedicated BRT lane.

Victoria Road, Sydney, Australia
Bus Rapid Transit (BRT) Lane

- **“Bus Only” lane from 5:30 am to 9:45 am**
- **6 lane road has 4 lanes for morning traffic**
- **Bus riders save 18 minutes per day***
- **6,000 bus services per week**

***Road Transit Authority, Australia**

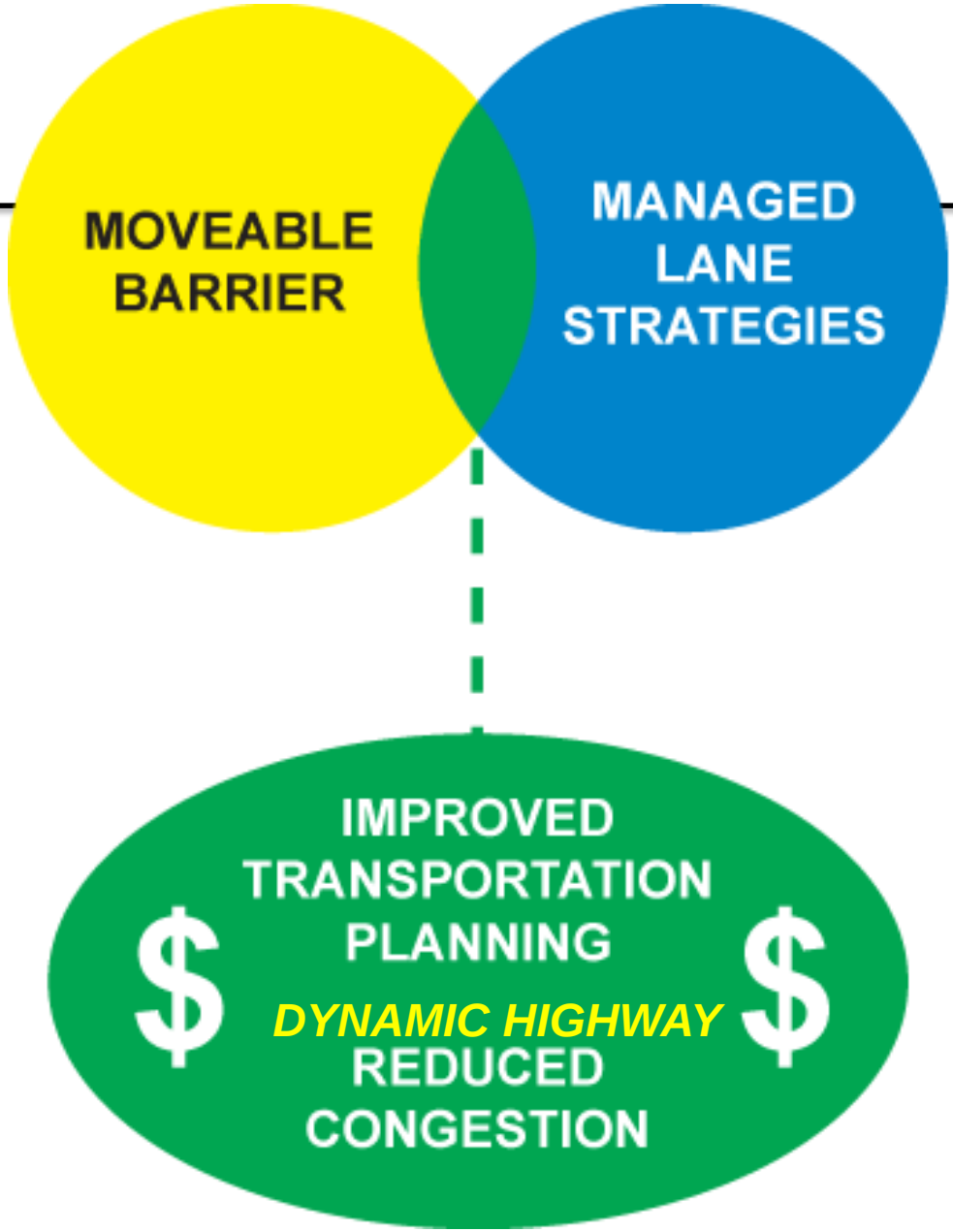
Combining Strategies: Dynamic Highways

Build vs Moveable Barrier options

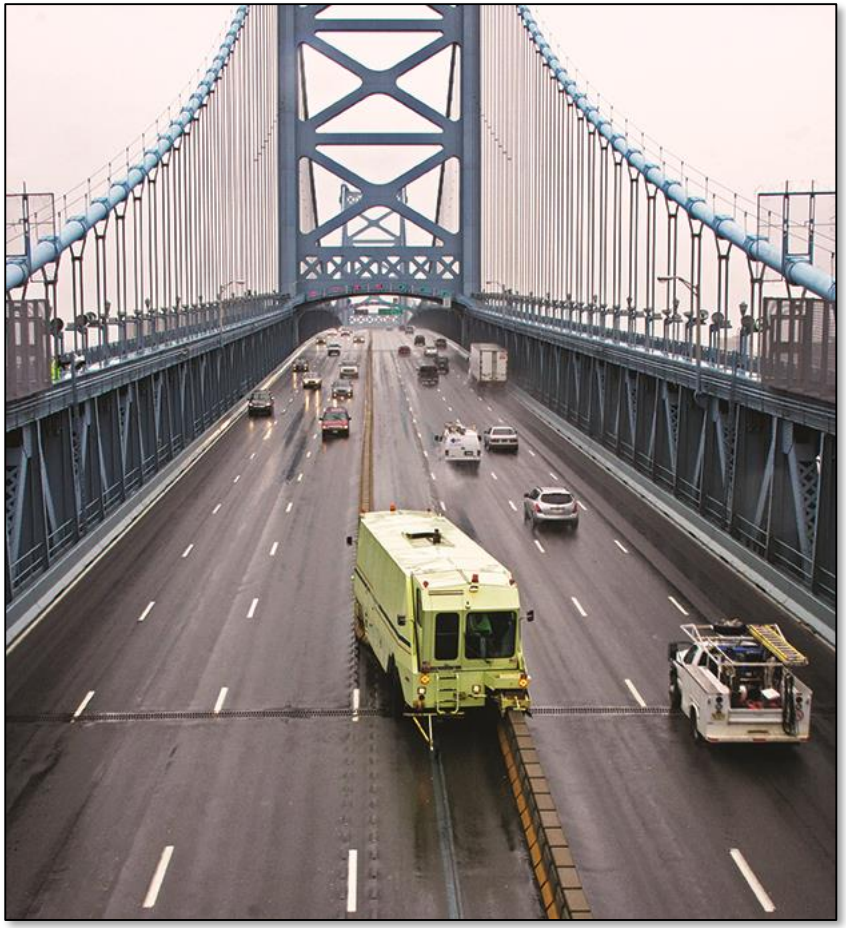
Table 1. Cost Comparison of moveable barrier and building additional capacity

Expense	*COST COMPARISION OF MOVEABLE BARRIER AND BUILDING ADDITIONAL CAPACITY*	
	Build Two Extra Lanes	Use Moveable Barrier for Two Lanes
Capital	~28 000 000 USD	~5 500 000 USD
20 year Operating Cost	N/A	~6 1 million USD
Roadway Maintenance	~4 3 million USD	N/A
Cost of Capital	~12 7 million USD at 4%	~2 4 million USD at 4%
Total 30 Year Cost	~45 million USD	~14 million USD
Total Annual Cost	~2 25 million USD	~0 7 million USD

- 2.4Km long bridge addition
- 0.7 Million per year with op costs
- 2.2 Million avg with higher upfront capital Costs


MOVEABLE BARRIER
MANAGED LANE STRATEGIES
IMPROVED TRANSPORTATION PLANNING
$
$
DYNAMIC HIGHWAY
REDUCED CONGESTION

Managed Lanes Benefits With Moveable Barrier



- Installed in 12-18 months vs 5-10 yrs
- Create flexibility for the future
- Mitigate traffic congestion
- Shorten Work Zone projects
- Provide positive barrier protection
- Meet regional mobility & safety goals
- Generate additional revenue
- Meet environmental and air quality goals
- Reusable Asset

Oregon experience with Roadzipper

Current Status

- Initial purchase of 1 mile barrier and a machine in 1994
- State bought 2.8 miles more in 2004
- Used in Work Zones a number of times.

Future

- Suggest training webinars for Oregon designers and DOT
- More proactive use in congested Workzones in state
- Rental of machines as needed from Lindsay.

NEXT STEPS

- Set up next meetings with
    - Senior DOT leaders
    - MPO’S and long term planners transportation planners
    - Designers that service this community
    - Other Civic leaders
- Lindsay can show how it can be used but it is local buy in and support that will make the system a useful tool to the community.
- Requires funding to operate the system over its life cycle.

Presentation by Chris Sanders

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