



# **Arterial HOV Lanes**

## **Where (and Why) Now?**



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# Outline

- HOV Facility Definition
- HOV Inventory
- Operating Experience
- Addressing Issues
- Action Plan for Moving Forward



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# Arterial HOV Lanes Defined

- Lane on a signalized arterial restricted to buses *and* carpools
- NOT a freeway lane
- NOT a Reserved Bus Lane
- NOT a Bus + Taxi Lane
- NOT a ramp meter bypass lane

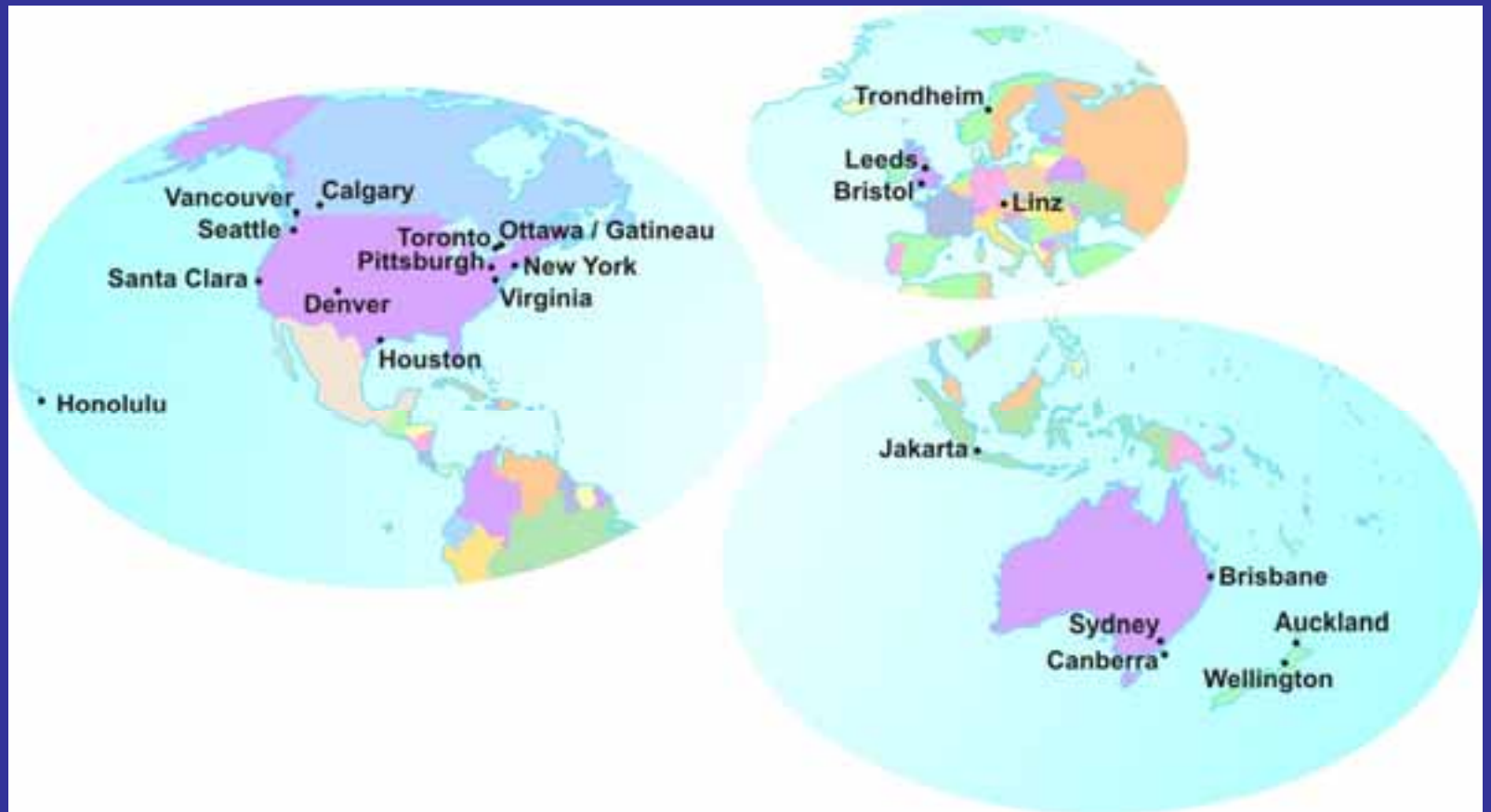


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# Arterial HOV Lane Inventory

[www.mrc.ca/hovworldwide2.htm](http://www.mrc.ca/hovworldwide2.htm)



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# Growth

- 1970s: ~ 5 projects
- 1980s: ~ 10
- 1990s: ~ 50
- 2000s: ~ 15 so far



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# Arterial HOV Statistics

- 51 % 2+ vs 47 % 3+
- 83 % peaks vs 14 % 24 h
- 90 % 2 way vs 10 % 1 way
- 98 % curb lane vs 2 % median lane
- 6 Networks vs 3 with several routes  
vs 12 standalone projects
- Total length ~ 300 km
- Average length <4 km



# A Quick Worldwide Tour...



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# Brisbane



Queue bypass at freeway entrance

Nothing fancy...



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# Sydney



Extensive  
system



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# Calgary



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## Tidal flow operation on Centre Street

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# Ottawa / Gatineau



Reversible HOV lane on  
3 lane bridge



Bus Signal Priority



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# Toronto area



65 km of arterial HOV 3+



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# Vancouver / Burnaby

HOV 3+



HOV 3+ Queue Jumps



HOV 6+



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# Jakarta, Indonesia



Entire street is HOV 3+ in peaks; can hire a passenger



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# Auckland, NZ

Enforcement  
made a big  
difference



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# Wellington, NZ



Weekday commuters and weekend recreational trips squeeze through an established area



# Trondheim, Norway



HOV 2+ in Norway



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# Bristol, UK



UK promotes  
photo enforcement



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# Leeds, UK



UK's first  
HOV lane



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# Linz, Austria



Buses, 3+ carpools, and livestock trucks!

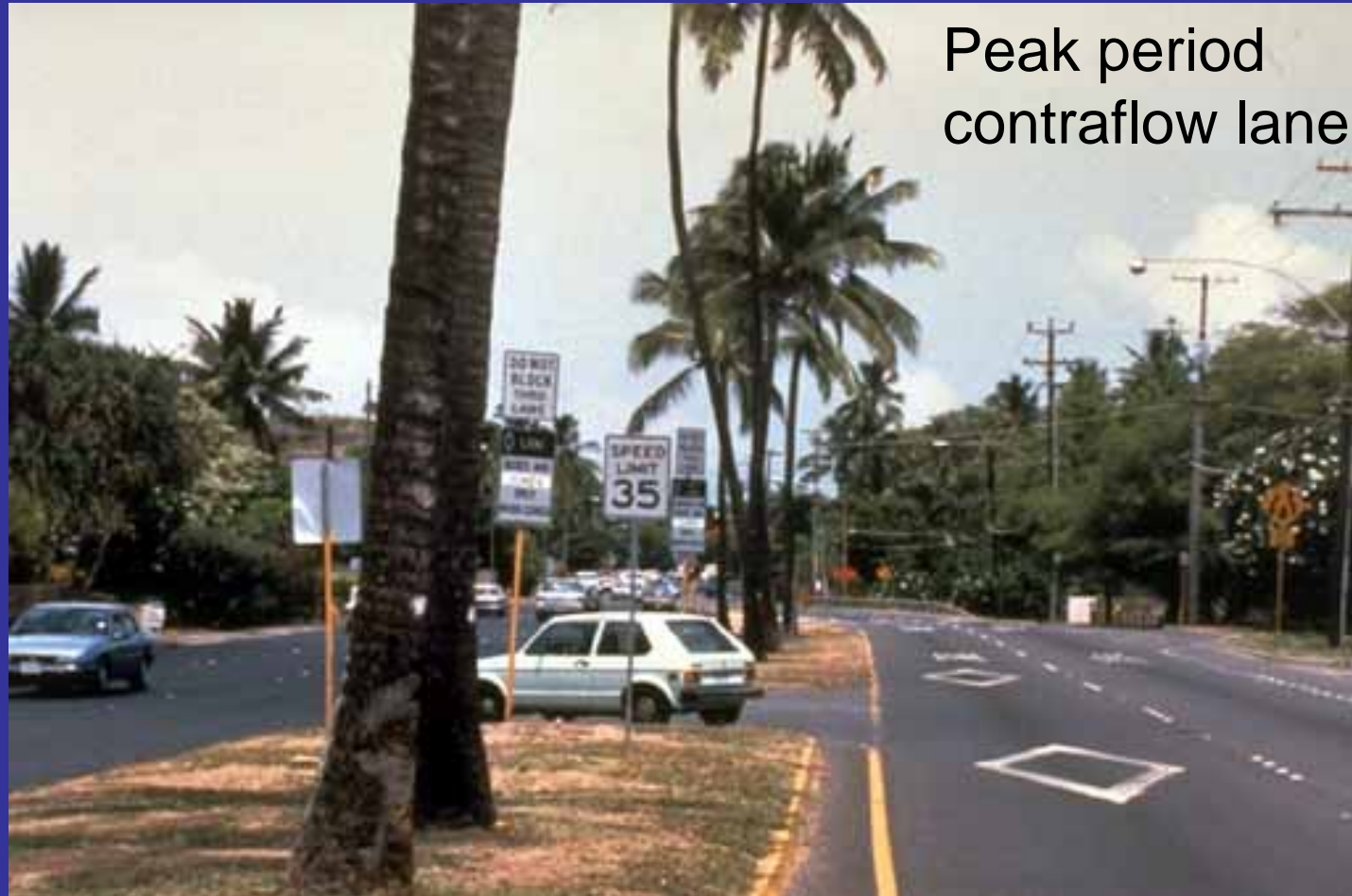


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# Honolulu

Peak period  
contraflow lane



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# Houston



Extensive system of  
HOV lanes on one-way  
downtown grid



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# New York



Central Park roads  
are HOV 2+  
weekday mornings



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# Pittsburgh



Access to downtown  
via reversible HOV-  
only tunnel



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# Santa Clara County



Overhead lights  
flash when HOV  
in operation



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# Seattle

HOV lanes  
include right turns



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# So. What Have We Learned?

- 1) Many cities have tried it
- 2) Everyone has their own reasons
- 3) Infinite variety
- 4) Few cities have pursued comprehensive arterial HOV strategies
- 5) Limited objectives; moderate success
- 6) Inherent problems
- 7) Need greater commitment if opportunities are to be realized



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# Measures of Effectiveness

- Adequate usage
- Travel time advantage
- Impact on total person-movement
- Impact on mode choice
- Compliance



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# Arterial HOV Lane Issues

- 1) Inadequate impact on HOV use
  - a) Too short
  - b) Isolated
  - c) Poor time savings
  - d) Unreliable
  - e) Too few HOVs in corridor to begin with
- 2) Conflicting users / functions
- 3) Enforcement
- 4) Transit role
- 5) Operations
  - a) Right turns
  - b) Bus stops
- 6) Lack of knowledge / information



# Solutions #1: Accommodate Conflicting Needs

- Buses
  - Careful positioning of bus stops
- Carpools
  - Indented bus bays
- Bicycles
  - Wide curb lane
- Parking / Stopping in Curb lane
  - Peak period Clearway
  - HOV lane in 2<sup>nd</sup> lane
- General traffic
  - Clarify rules for right turns
  - Limit hours of operation



# Solutions #2: Violation / Enforcement

- Emphatic signage, pavement marking
- Provisions for police use
- Funding for enforcement
  - Direct fine revenue to HOV program
  - Fund initial program via construction \$
- Effective penalties
  - Communicate via signage
- Public awareness / education
- Monitoring program
- Automated Occupancy Detection systems



# Solutions #3: Regional Scale Co-ordination

- Embed HOV in TMPs
- Use Regional HOV / TDM Co-ordinating Committee
- Co-ordinate infrastructure, operations, support programs, funding, priorities
- Integrated portal for user information
  - Transit use
  - Ridematching / carpooling
  - Parking
  - HOV lane performance



# Solutions #4: Information

- Define MOEs
- Do a Baseline Monitoring Study
- Regular Performance Monitoring
- Report to Council
- Publish on Internet
- Establish National / International Forum for information sharing



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# Solutions #5: Operational Design

- Define National Best Practices
- Train planning / design staff
- Protect for HOV options throughout planning process
- Involve transit and police in planning and design
- Acquire adequate property
- Implement large enough projects to have an impact



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# Action Plan:

## Consolidate knowledge; Move forward

- Transport Canada, TAC, CUTA, CITE, municipalities, provinces:
  - Arterial HOV database
  - National arterial HOV standards
  - National info-sharing forum
- Educate stakeholders
- Engage stakeholders in improving current facilities
- Pursue automated occupancy detection



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# Conclusions

“Anything worth doing  
is worth doing well”



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# Contact

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