U.S. Department of Transportation
Federal Highway Administration

Build Smart, Build Steady: Winning Strategies for Building Integrated Corridor Management Over Time

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Source: FHWA

Webinar Purpose

- Provide an overview of the new resource available to practitioners:
  - *Build Smart, Build Steady: Winning Strategies for Building Integrated Corridor Management Over Time.*
  - Report FHWA-HOP-19-039.
- Discuss key concepts and messages of primer.

Source: FHWA

Introduction and Purpose

- Provide information to agencies on how to:
  - Deploy incrementally Integrated Corridor Management (ICM) and supporting Decision Support Systems (DSS).
  - Adapt the ICM deployment and associated organizational form over time.
  - Achieve long-term ICM financial sustainability.
- Present key challenges observed for ICM deployments in various states of maturity across the country, and suggested actions to mitigate them.

Build Smart, Build Steady Primer
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Key Considerations for Building Smart, Building Steady Towards a Successful ICM

- Funding for building or enhancing ICM capabilities is usually incremental.
- Agencies need time to build relationships among ICM stakeholders.
- Agencies need time to understand the system dynamics and corridor performance — and to sort out what "good" looks like from a shared collective viewpoint.
- ICM can be usefully pursued as a crawl-walk-run proposition, leveraging a set of relatively lightweight near-term early wins to create momentum.

Overcoming Key ICM Deployment Challenges

1. **Lobby key stakeholder(s) to participate:** Appeal to the notion that all stakeholders are dependent on corridor performance and keeping the region/corridor competitive.
2. **Overcome a zero-sum mentality among stakeholders:** Good corridor management is win-win, not win-lose, and reflected in the institutional arrangements made among stakeholders.
3. **Get an early ICM win:** Focus on the conditions that make it obvious that ICM has value — use any benefit of an early successful coordinated event response to highlight/suggest how further, bigger stakeholder coordination would be even better!

Overcoming Key ICM Deployment Challenges Continued

4. **Having no ICM owner results in building no ICM momentum:** Build an ICM coalition that is both broad (number of organizations) and deep (multiple persons within key organizations).
5. **ICM benefits are not always clear on a day-to-day basis:** ICM delivers highest value when corridor conditions are most challenging — individually infrequent, but collectively, not uncommon.
6. **ICM value proposition may be difficult to demonstrate:** More predictable congestion patterns are highly valued for the quality of life they provide for frequent corridor travelers.

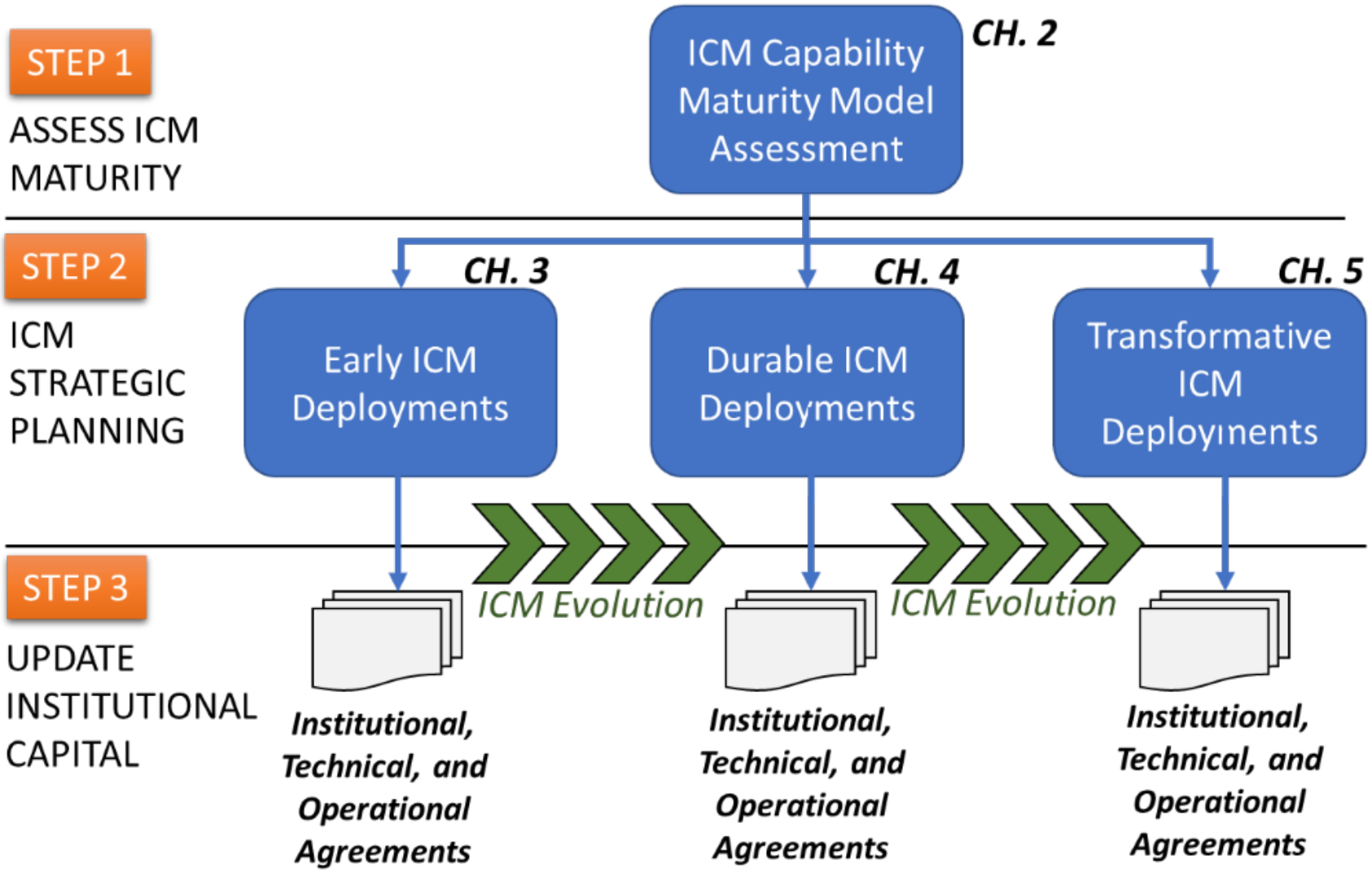
Overcoming Key ICM Deployment Challenges Continued

7. **Traditional revenue models are in decline:** Financial sustainability may be a strong motivator to consider a more transformative third-party model.
8. **Public indifference:** Set aside resources to explain how ICM helps everyone who uses the corridor and enhances region/corridor economic competitiveness.
9. **The sometimes "hidden" elements of ICM may be difficult to market:** Focus attention on ICM-responses to highly visible events and/or corridor performance, and educate the press and the public what ICM did/does to improve that performance.

Three Types of ICM Deployments

- **Early:** Emerging deployers with a need for more integrated corridor management, but limited institutional, operational, and technical capabilities.
- **Durable:** Deployments ready to evolve to a more permanent capability to maintain momentum and continuous improvement.
- **Transformative:** Long-standing, durable deployments considering formalized financial and institutional models.

Steps to Building Smart, Building Steady



Source: FHWA

ICM Stakeholder Arrangements

- ***Institutional* Arrangements:** Govern how ICM stakeholders determine and guide the strategic direction of the ICM deployment over time.
- ***Operational* Arrangements:** Govern the roles, responsibilities, limitations, and tactical interactions among ICM system operators.
- ***Technical* Arrangements:** Govern the ownership and responsibility among stakeholders for the security, monitoring, maintenance, and enhancements of ICM system assets.

What are “Institutional” Arrangements

- Corridor Vision, Goals, and ICM Concept Management Arrangements.
- System Integration Arrangements.
- Financial and Capital Planning Arrangements.
- Organizational Forms and Governance Policy Arrangements.

What are “Operational” Arrangements

- Operational Mode and Procedures Arrangements.
- Tactical Operations Action Planning Arrangements.
- Safety/Emergency Management Arrangements.
- External Stakeholder Engagement Protocols/Procedures Arrangements.

What are “Technical” Arrangements

- Data Management Arrangements.
- Cybersecurity Arrangements.
- Systems Engineering Management Arrangements.

Capability Maturity Model (CMM)

- ICM CMM first developed as part of NCHRP Project 20-68A: Advances In Strategies For Implementing Integrated Corridor Management (ICM)
- Describes an evolutionary improvement path for agencies for various transportation areas in five levels:
  - Level 1: Silo
  - Level 2: Centralized
  - Level 3: Partially Integrated
  - Level 4: Multimodal Integrated
  - Level 5: Multimodal Optimized

For more information: NCHRP Report 899: Broadening Integrated Corridor Management Stakeholders (2020)

ICM Capability Maturity Model

		Level 1 Silo	Level 2 Centralized	Level 3 Partially Integrated	Level 4 Multi-modal Integrated	Level 5 Multi-modal Optimized
Institutional Integration	Inter-agency Cooperation	Agencies for not coordinate their operations	Some agencies share data but operate their networks independently	Agencies share data, and some cooperative responses are done	Agencies share data, and implement multi-modal incident response plans	Operations are centralized for the corridor, with personnel operating the corridor cooperatively
	Funding	Single Agency	MPO tracks funding	Coordinate funding through MPO	Cooperatively fund deployment projects	Cooperatively fund deployment and operations and maintenance projects
Technical Integration	Traveler Information	Static information on corridor travel modes	Static trip planning with limited real-time alerts	Multi-modal trip planning and account-based alerts	Location-based, on-journey multi-modal information	Location-based, multi-modal proactive routing
	Data Fusion	Limited or Manual	Near real-time data for multiple modes	Integrated multi-modal data (one-way)	Integrated multimodal data (two-way)	Multi-source multi-modal data integrated and fused for operations
Operational Integration	Performance Measures	Some ad hoc performance measure based on historical data	Periodic performance measures based on historical data	High-level performance measures using real-time data	Detailed performance measures in real-time for one or more modes	Multi-modal performance measures in real time
	Decision Support System	Manual coordination of response	Pre-agreed incident response plans	Tool selection of pre-agreed plans	Model-based selection of pre-agreed plans	Model-based creation of incident response plans

Source: FHWA

Early ICM Deployment Candidate Corridors

- Candidates should have maturity ratings of at least **one** in all six integration areas, and preferably ratings of **two** or **three** for Inter-Agency Cooperation, Funding, Performance Measures, and Decision Support System.
- Candidates should have a significant motivating need for a more integrated solution to corridor management, but little institutional capital, operational integration and technical capabilities.

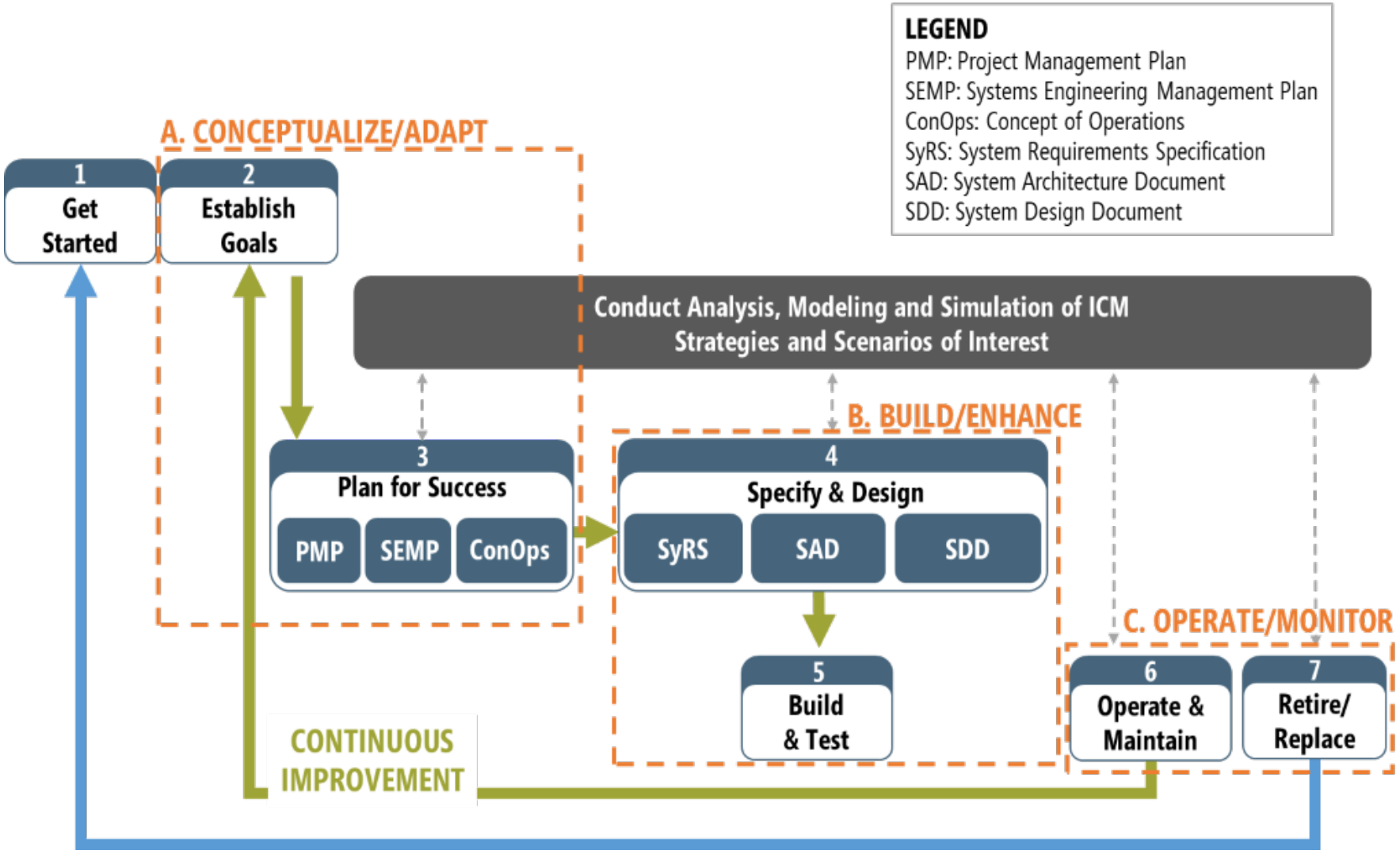
Durable ICM Deployment Corridors

- Deployments should have maturity ratings of at least **three** in all six integration areas and possibly ratings of **four** or **five**, particularly for Inter-Agency Cooperation, Funding, Performance Measures, and Decision Support System.
- Corridors that are ready to evolve from an early, exploratory/initial state into a more permanent, durable, and comprehensive ICM capability.

Transformative ICM Deployment Corridors

- Deployments should have robust maturity ratings of **five** in all six integration areas.
- Long-standing, durable ICM capabilities should exist such that the regional stakeholders are now considering more formalized financial and institutional models.

Adapted ICM Implementation Process



Source: National Cooperative Highway Research Program (NCHRP)

Subordinate ICM Task Forces

- Take on assignments to coordinate, create, investigate, and enhance institutional, operational, and technical capabilities.
- Operate within the context of the broader planning and operations processes established for the region.

ICM Task Forces
Performance Measurement
Applications/Strategies
Decision Support Systems (DSS)
Data Sharing
Institutional/Operational/ Technical Arrangements
Investment Planning
Analytics

Building ICM Capability
Conceptualize/Adapt

Goal:

- Create a new ICM corridor community or significantly adapt an existing community to incorporate a new set of stakeholders.

Key Steps
Prioritize Top Corridor Needs
Identify Potential Stakeholder Impact and Coordinated Response
Create/Update Corridor Vision
Create/Update Institutional Arrangements

Building ICM Capability
Build/Enhance

Goal:

- Identify the technical capabilities that need to be built or enhanced for addressing the top five needs identified in the previous phase.

Key Steps
Identify New or Enhanced Performance Measurement Approach
Describe New or Enhanced Applications/Strategies
Identify New or Enhanced DSS
Identify New or Enhanced Data Sharing
Identify Gaps and Required Technical Integration
Create/Update Technical Arrangements

Building ICM Capability
Operate/Monitor

Goal:

- Identify the operational coordination required to realize the technical capabilities identified in the previous phase.

Key Steps
Rate Operational Readiness
Create/Update Operational Agreements

Creating a Durable ICM Deployment
Conceptualize/Adapt

Goals:

- Conduct periodic assessment of the top five corridor needs, potential stakeholder impacts, and corresponding coordinated responses.
- Have a clear vision of the future corridor service.
- Identify what arrangements are needed so that the corridor can successfully compete for operational/capital funding.

Key Steps
Prioritize Top Corridor Needs
Identify Potential Stakeholder Impacts of Alternate Coordinated Responses
Create/Update Institutional Arrangements

Creating a Durable ICM Deployment
Build/Enhance

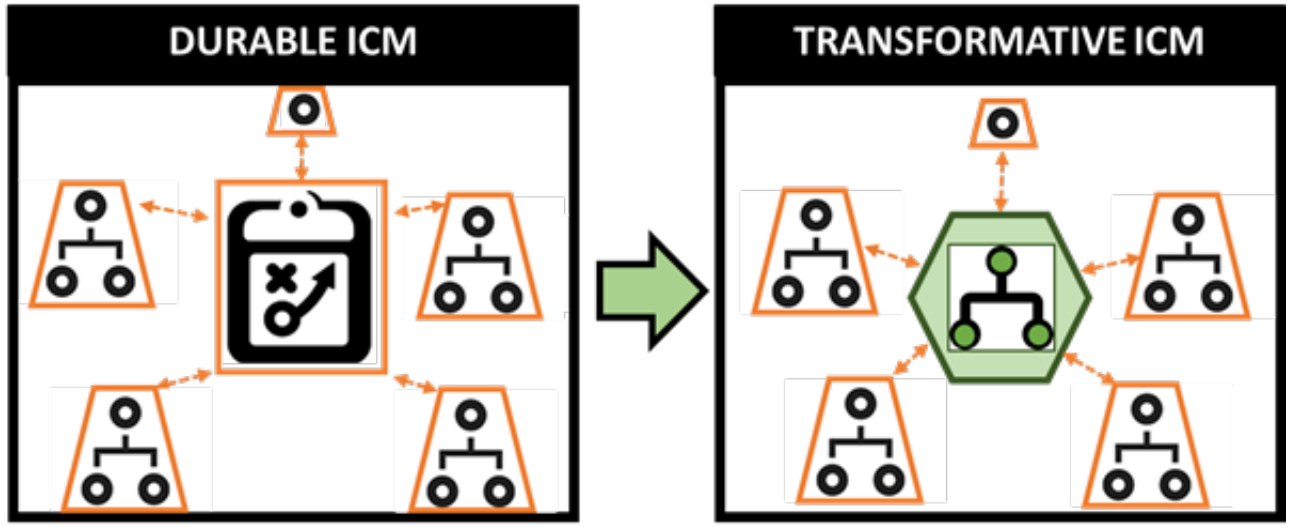
Goal:

- Identify the technical capabilities that need to be enhanced for addressing the top five corridor needs.

Key Steps
Identify New or Enhanced Performance Measurement Approach
Describe New or Enhanced Applications/Strategies
Identify New or Enhanced DSS
Identify New or Enhanced Data Sharing
Identify Gaps and Required Technical Integration
Create/Update Technical Arrangements

Creating a Transformative ICM Deployment

- All or part of the ICM management functions are transferred to a **third party**:
  - The third party could be wholly independent, or a subsidiary of a public agency, or newly created.
  - Define management responsibility of the corridor, and commitment to the target corridor performance.



Source: FHWA

Readiness for Third Party Operations

- Stable corridor operational practices that define third party responsibilities.
- Proven performance measurement.
- Strong corridor stakeholder cohesion around goals and corridor performance.

Motivation for Third Party Operations

- Insufficient operational revenue.
- Insufficient capital revenue.
- Desire for institutional permanence.
- Desire for direct accountability.

Are You Ready to Get Started?

- Primer includes detailed exercises such as:
  - Applying/determining the ICM Capability Maturity Model.
  - A strategic Planning Exercise for ***Early*** ICM Deployers.
  - A strategic Planning Exercise for ***Durable*** ICM Deployers.
  - A strategic Planning Exercise for ***Transformative*** ICM Deployers.
- The primer also includes pre-exercise homework and post-exercise next steps for deployers.

ICM Resources for Next Steps

- See the **Build Smart, Build Steady: Winning Strategies for Building Integrated Corridor Management Over Time** for a full list of resources that may be useful as you consider moving forward with ICM in your region:
  - Report FHWA-HOP-19-039.
- **Website has htm and pdf versions (URL below).**

https://ops.fhwa.dot.gov/publications/fhwahop19040/index.htm

Where Can You Find This Resource?

Here is a screen shot of the FHWA Office of Operations' "Corridor Traffic Management" website.

Item

Corridor Traffic Management

Program Areas > Reducing Recurring Congestion

When congested traffic conditions occur on one roadway, traffic on adjoining roadways or freeway interchanges in the corridor, are also impacted. Typically, as congestion occurs on one roadway, travelers respond in a variety of ways: finding an alternate route, selecting a different roadway (freeway versus surface street), adjusting their trip to another time of day, or remaining on their current route and enduring the significant delays. These disruptions range in scale, frequency, predictability, duration, and have the potential to impact a number of facilities or modes. A number of promising approaches may enhance how we currently operate the surface transportation system. The proactive use of managed lane strategies, alternate routing of traffic, and proactively managing and controlling traffic within freeway corridors offer are a few useful approaches. These strategies have the potential to achieve significantly greater levels of utilization of the existing roadway capacity, improve travel times, enhance safety, and reliability of travel.

- About Corridor Traffic Management

Related Effort

- About Integrated Corridor Management

Integrated Corridor Management

- What is Integrated Corridor Management (Flyer)
- Integrated Corridor Management (ICM) Program: Major Achievements, Key Findings, and Outlook (Document)
- Integrated Corridor Management (ICM) – Mainstreaming ICM: An Executive Level Primer (Document)
- Integrated Corridor Management (ICM) Ten Attributes Of A Successful ICM Site (Flyer)
- Elements of Business Rules and Decision Support Systems within Integrated Corridor Management: Understanding the Intersection of These Three Components (Document)
- Intelligent Transportation Systems Joint Program Office - Integrated Corridor Management Research Archive (Web site)
- Integrated Corridor Management and the Smart Cities Revolution: Leveraging Synergies (Document)
- Integrated Corridor Management and Traffic Incident Management: A Primer (Document)
- Integrated Corridor Management, Managed Lanes, and Congestion Pricing: A Primer (Document)
- Integrated Corridor Management, Transit, and Mobility on Demand (Document)
- Integrated Corridor Management and Freight Opportunities (Document)
- Leveraging the Promise of Connected and Autonomous Vehicles to Improve Integrated Corridor Management and Operations: A Primer (Document)
- Build Smart, Build Steady: Winning Strategies for Building Integrated Corridor Management Over Time (Document)

https://ops.fhwa.dot.gov/program_areas/corridor_traffic_mgmt.htm

Questions

Contact Information

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Website
https://ops.fhwa.dot.gov/program_areas/corridor_traffic_mgmt.htm