



U.S. Department of Transportation
Federal Highway Administration

Mainstreaming Integrated Corridor Management (ICM)

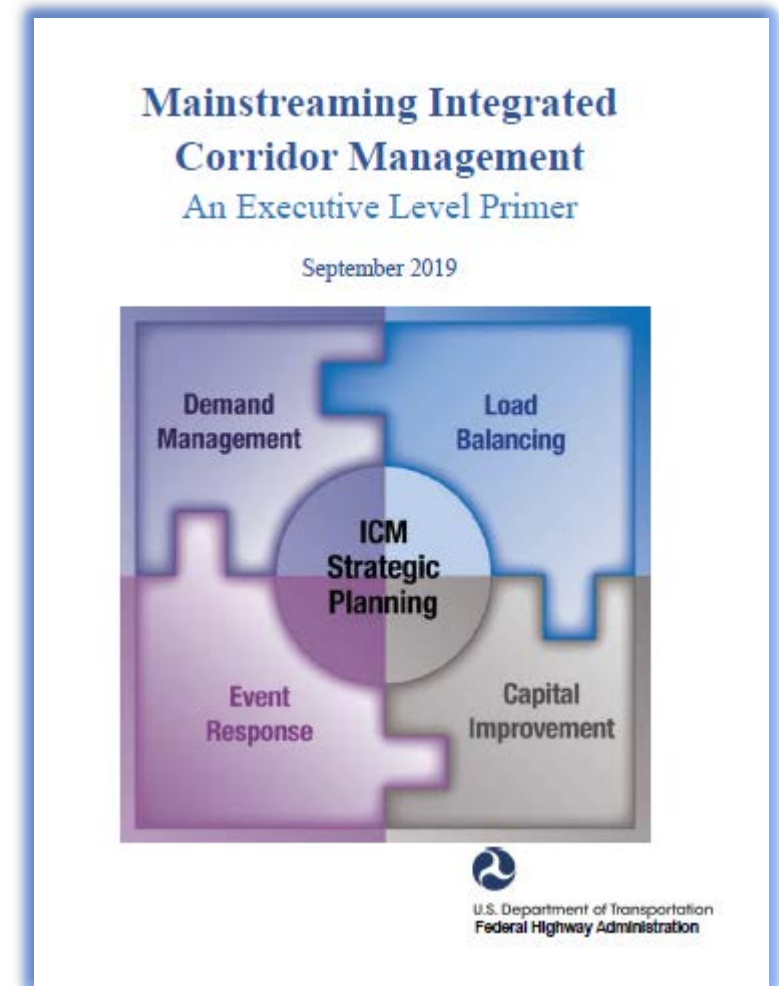
Webinar

FHWA Office of Operations
May 19, 2020



Webinar Purpose

- Provide an overview of the new resource available to practitioners: *Mainstreaming Integrated Corridor Management Primer*.
 - Report [FHWA-HOP-19-040](#)
- Discuss key concepts and messages of primer.



Integrated Corridor Management (ICM)

Mainstreaming Primer: Introduction and Purpose

- Provide *executive* level public sector decision-makers and transportation officials with an understanding of ICM.
- Describe ICM best practices and lessons learned.
- Empower transportation officials to mainstream ICM in their business processes.
 - Transportation planning.
 - Project development.
 - Operations practices.
 - Funding.
 - Institutional collaboration.

ICM Mainstreaming Primer

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What is Integrated Corridor Management?

Integrated . . *combining or coordinating separate agencies so as to provide a harmonious, interrelated “whole”*

Corridor . . *a travel shed of trips anchored by one or more highway, arterial, or rail line*

Management . . *the coordination of jointly managing **all** the travel therein in order to achieve defined objectives*

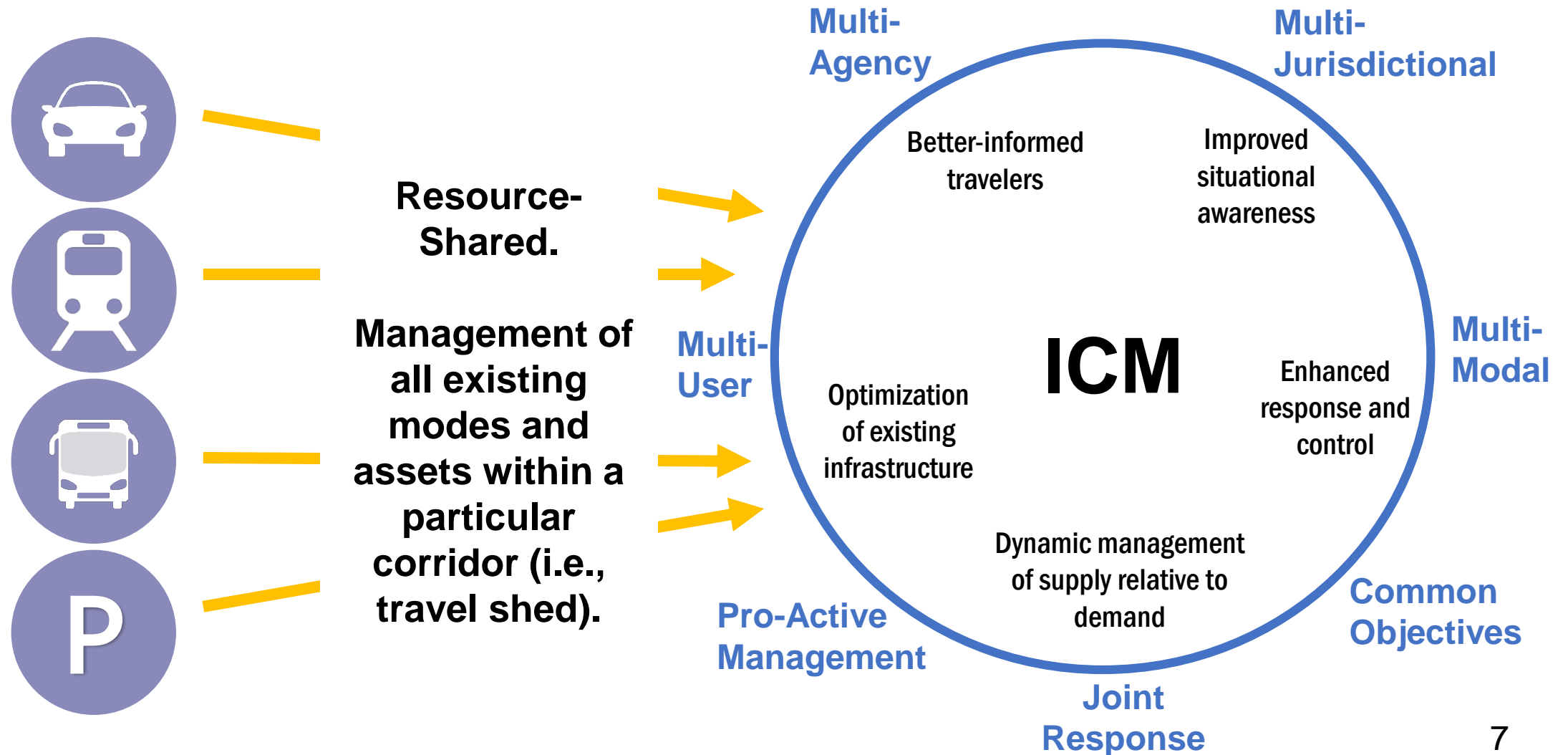
What is “Mainstreaming?”

Mainstream (noun) – a principal or dominant course, tendency, or trend.

Mainstreaming (verb) – to send to the principal or dominant or widely accepted group, movement, or style.

Source: Dictionary.com

Integrated Corridor Management Approach



ICM Requires 3 Types of Integration

Institutional

*ICM requires coordination of **collaboration among various agencies and jurisdictions** that transcends institutional boundaries (e.g., memorandums of agreements and working agreements, etc.)*

Operational

*ICM requires multi-agency and cross-network operational strategies to **collectively manage the total capacity and demand of the corridor** (e.g., signals, routes, proactive actions, and responses, etc.)*

Technical

*ICM requires **sharing and distribution of information, and system operations** and control functions to support the immediate analysis and response (e.g., shared data, cross-approvals for actions, and complementary response assistance.)*



ICM Characteristics

ICM is not...	ICM is...
Siloed decisions, optimizing individual agency's systems (freeway management, arterial signal, incident management, or bus operations/dispatching system)	Multi-Agency decisions, via business rules, optimizing corridor as a whole
Reactive, ad-hoc	Proactive, planned, predictive

How Does ICM Work?

ICM is implemented through a **Decision Support System (DSS)**. A DSS is an information system that supports business or organizational decision-making activities, resulting in ranking, sorting, or choosing from among alternatives. A DSS must be programmed to incorporate **business rules** and agreements with relevant entities when making recommendations.

The right information.

To the right stakeholder.

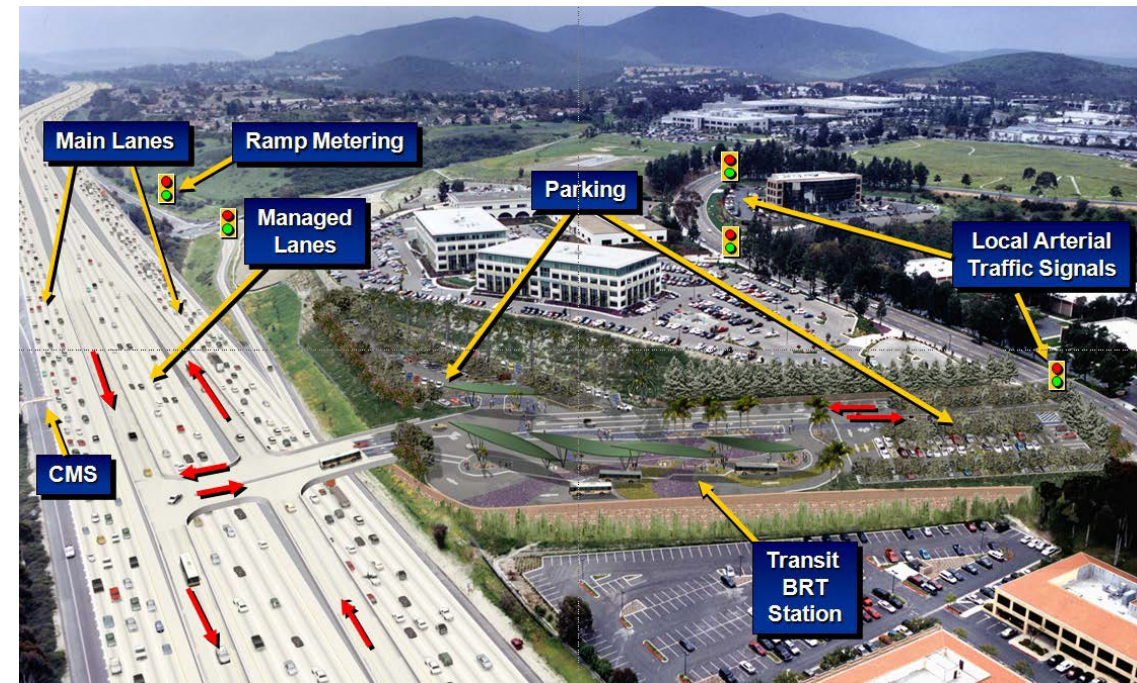
At the right point in the workflow.

Through the right channel.

In the right format.

DSS In the ICM Context...

- An ICM DSS monitors for 'atypical' congestion on a corridor to alert 'triggers' that would invoke a DSS response(s).
- The ICM DSS evaluates alternative responses or diversion strategies and selects the best response (including do nothing)
- ICM managers then accept or decline recommended actions to mitigate that atypical event.
- 'Acceptance' then initiates the pre-agreed 'rules' amongst the varying agencies.
- Various levels of automation can be applied through software



Source: FHWA (San Diego ICM Pilot Project)

Why Should You Invest in ICM?

- Key findings from two pioneers ICM sites showed improved:
 - Inter-agency cooperation and coordination.
 - Situational awareness / response and control.
 - Mobility.
 - Traveler information and satisfaction.
 - Decision Support Systems (DSS).
 - Alternate routes / signal timing.

Agencies, are you ready to get started?

Here are ten attributes to success



- 1. Is there significant congestion and unreliability?**
 - The most critical – and most obvious – attribute is . . . need.
- 2. Is sufficient infrastructure available?**
 - Parallel arterials, transit routes, mode hubs, alternatives to the clogged freeway.
- 3. Are there multimodal capabilities?**
 - Bus, rail, transit, and freeway platforms must be able to communicate with each other.
- 4. Is there a centralized data hub?**
 - A transportation management center (TMC) makes it easier to organize and analyze the data dump.
- 5. Are there successful regional procurement practices?**
 - Needed: ITS experts who understand expertise requirements.

Continued on next page . .

Are You Ready to Get Started?

Here are ten attributes to success.

Continued



Specifically: What is Mainstreaming ICM?

- **What is mainstreaming ICM?** This involves incorporating ICM strategies into the processes of multi-agency planning and programming.
- **Why is mainstreaming ICM important?** Without an effort to mainstream ICM, it will always remain a separate initiative within a region, not fully understood or supported. It may be underfunded and could likely lose momentum.
- **Strive for broad, multi-level institutional acceptance.**

How to Mainstream ICM Across Agencies

- Build on an existing collaborative group.
- Ensure there is at least one committed champion.
- Establish a lead coordinator.
- Organize and train staff.
- Achieve multi-agency support.
- Gather support from government leadership.
- Engage stakeholders.



Mainstreaming ICM: Transportation Planning

- Adopt ICM-centric goals.
- Use Federal Highway Administration (FHWA) resources.
- Use Analysis, Modeling and Simulation (AMS) tools.
- Incorporate ICM strategies into Transportation System Management Operations (TSMO) Plans.
- Integrate ICM into planning meetings.
- Consider ICM strategies in planning studies, and alternative analyses.
- Make ICM part of standard regional processes.



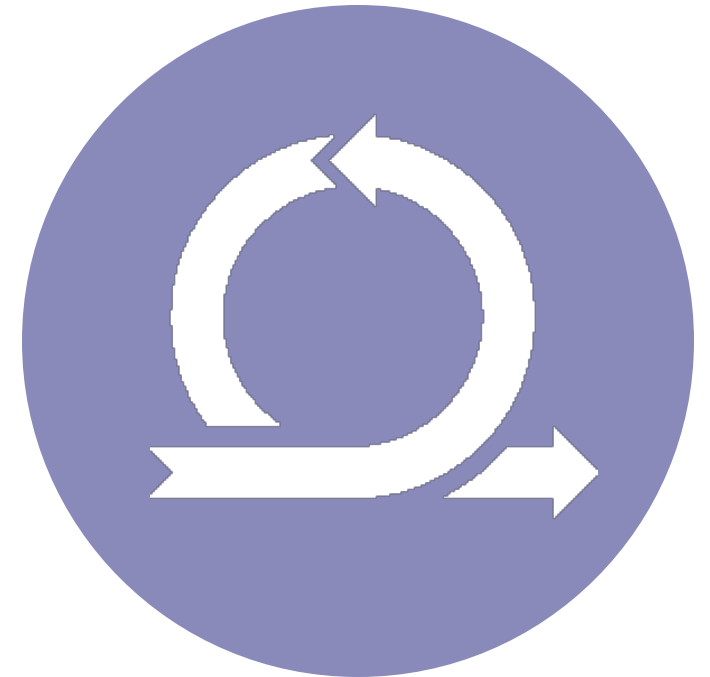
Mainstreaming ICM: Transportation Programming

- Include ICM in Transportation Improvement Programs (TIP).
- Ensure that project selection procedures consider the impacts of ICM.
- Utilize federal funding opportunities for ICM projects.



Mainstreaming ICM: Project Development

- Plan for incremental deployment of your ICM systems.
- Use the system engineering process.
- Use and update your regional ITS architecture.
- Recognize that ICM projects are like other ITS projects.



Mainstreaming ICM: Operations and Maintenance

- Include ICM components in Intelligent Transportation Systems (ITS) operations, maintenance contracts, technological refreshes, or equipment swap outs.
- Incorporate ICM Management Systems (ICMS) into performance review meetings.
- Address ongoing ICMS operations and maintenance roles and funding needs.



Locations of ICM Efforts



Funding ICM Best Practices

- Consider integrating ICM into your regional TSMO, ITS, and State and local short and long-range plans.
- Decide whether to incorporate ICM into your department's programmatic, TSMO, and ITS budgets.
- Assess if your organization might add ICM to larger project proposals for Discretionary Grant Programs.
- Take into account whether your agency might budget for long-term operations and maintenance.



Where Can Funding for ICM Be Found?

- Federal grant programs. (See next slide.)
- Congestion Mitigation and Air Quality (CMAQ) program.
- Highway Safety Improvement Program (HSIP).
- National Highway Performance Program (NHPP).
- Surface Transportation Program (STP)/
Surface Transportation Block Program (STPB).
- Metropolitan planning activities.



U.S. DOT Discretionary Grant Programs

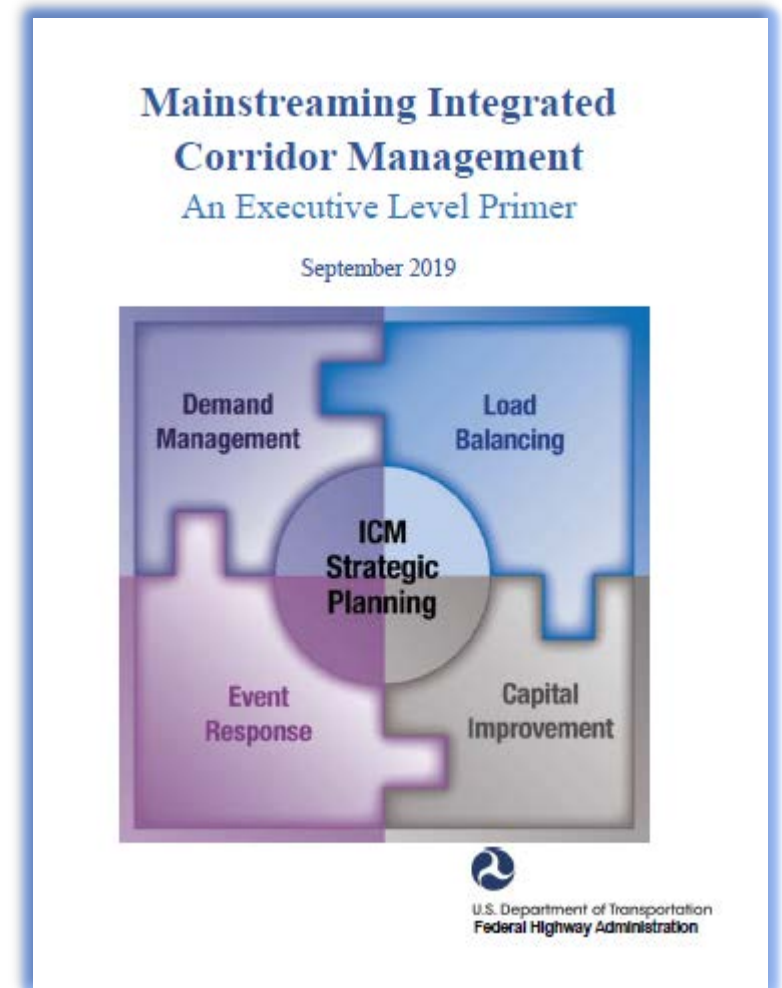
- Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD).
- Better Utilizing Investments to Leverage Development (BUILD).
- Infrastructure for Rebuilding America.



ICM Resources for Next Steps

- See the **Mainstreaming Integrated Corridor Management: An Executive Level Primer** for a full list of resources that may be useful as you consider moving forward with ICM in your region.
 - Report [FHWA-HOP-19-040](https://ops.fhwa.dot.gov/publications/fhwahop19040/index.htm)
- **Website has htm and pdf versions (URL below).**

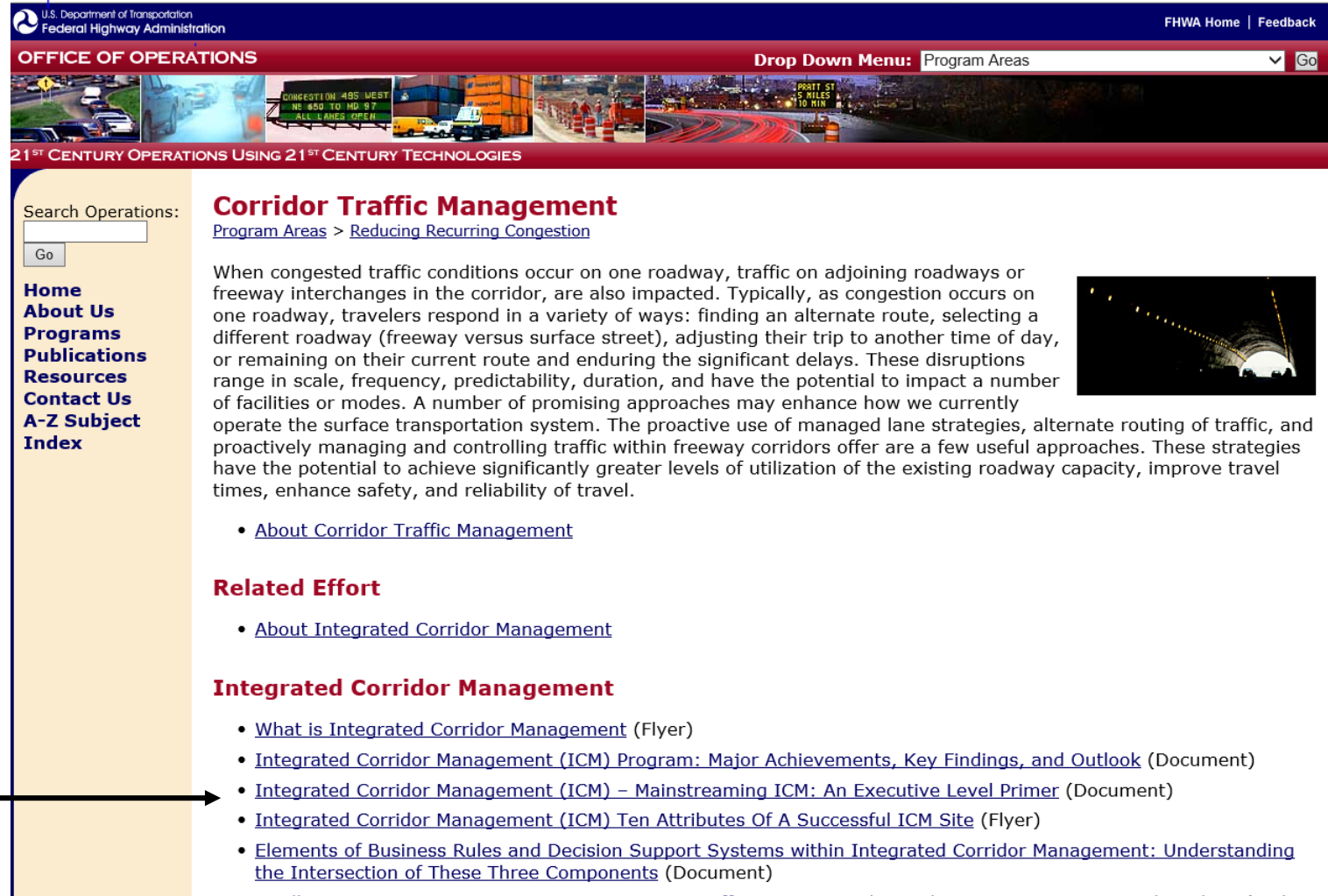
<https://ops.fhwa.dot.gov/publications/fhwahop19040/index.htm>



Where Can You Find This Resource?

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

Item



U.S. Department of Transportation
Federal Highway Administration

OFFICE OF OPERATIONS

Drop Down Menu: Program Areas

21ST CENTURY OPERATIONS USING 21ST CENTURY TECHNOLOGIES

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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 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)

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

Questions



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