Regional Models of Cooperation

Congestion Management

Efficiency through technology and collaboration

Every Day Counts

U.S. Department of Transportation
Federal Transit Administration

U.S. Department of Transportation
Federal Highway Administration
Purpose & Background

Promote cooperation and coordination across MPO and State boundaries to develop a regional approach to transportation planning

Supported by:
• Planning Emphasis Area (PEA) Fiscal Year 2016
• Every Day Counts (EDC-3)
Why is Enhanced Coordination Needed?

Multiple Metropolitan Planning Organizations → Coordinated Regional Planning
Why is Enhanced Coordination Needed?

Recognize mutual needs, goals, and objectives of the geographic region as a whole.
Regional Models of Cooperation: Implementation Activities

1. Webinar Series
2. Peer Exchange Workshops
3. Handbook
Regional Models of Cooperation
Webinar Series

1. Regional Models of Cooperation Overview (Jan 27, 2015)
3. Regional Transit Planning (October 16, 2015)
5. Congestion Management (February 11, 2016)
7. Joint Planning Products (June 9, 2016)
9. Multimodal Planning Cooperation Across Jurisdictions (October 13, 2016)
10. Freight Planning (December 8, 2016)
Today’s Speakers

• **Wayne Berman**
  FHWA Office of Transportation Management

• **Joe Bovenzi**
  Genesee Transportation Council

• **Zoe Neaderland**
  Office of Transportation Safety & Congestion Management, DVRPC

• **Alan Lehto**
  Planning & Policy, TriMet
Collaboration and Coordination: An Essential Element of Planning for Operations

Wayne Berman
FHWA, Office of Operations
Our planning process tends to focus most on planning roads, bridges, transit and bicycle/pedestrian infrastructure...

Yet, how well the transportation system is managed and operated on a day-to-day basis is a critical issue the public notices:

- Major traffic incidents
- Severe weather conditions
- Construction blocking lanes
- A special event tying up traffic
What is Transportation Systems Management & Operations?

- Maximizing the performance of the transportation system – roads, bridges, and rails – without adding new capital infrastructure.

- Utilizing innovative approaches to reduce delay and improve reliability:
  - Technology to monitor, assess, and adapt to changing travel conditions.
  - Real-time information sharing.
  - Collaboration and coordination across jurisdictional boundaries.

- Is Planned For
  - Through Regional Collaboration and Coordination
Managing travel demand – optimizing when (time of day), how (ridesharing, transit, bicycling, walking), and where people and goods travel (providing information on preferred routes).

Managing traffic and transit operations – improving reliability and reducing unnecessary delays.

**Strategy Examples**

- Traffic incident management
- Traffic signal coordination
- Transit signal priority
- Freight management
- Work zone management
- Special event management
- Congestion pricing
- Road weather management
- Managed lanes
- Ridesharing programs
- Parking management
- Traveler information
How to Plan for Operations

- Move from a “project based” focus to an objectives-driven “outcomes-based” approach.
- Coordinate across jurisdictional boundaries to integrate systems, modes, and technology solutions.
- Focus on maximizing existing systems and managing demand before capacity solutions.
Realizing the Tangible Benefits of Cooperation: “What’s in it for me?”

• A tangible benefit is an outcome or effect from a collaborative activity that supports an agency goal or objective.

• Agencies benefit in tangible ways from a range of collaborative activities in support of Planning for Operations (information sharing to joint operations)
Tangible benefits of Cooperation Mean:

- **Following the Money**: collaborative pursuit of funding
- **Getting Smart**: sharing expertise and joint learning
- **Speaking With One Voice**: coordinating communications and giving a consistent message
- **Being On the Same Page**: developing common procedures, protocols, and plans
- **Measuring Up**: jointly measuring performance
Tangible benefits of Cooperation Mean:

• **You Ought to Know**: sharing transportation information
• **Can You Hear Me Now?**: developing tools for efficient communications
• **Sharing the Wealth**: sharing resources
• **Building Economies of Scale**: consolidating services
• **All Together Now**: performing joint operations
Case Examples: Follow the Money

• Agencies that collaborate on funding applications enjoy increased access to outside funding.
  – Denver’s Traffic Signal System Improvement Program (TSSIP) – participants share $3.9M
  – Vancouver Area Smart Trek (VAST) “bundle” projects for joint application

“By forming together, we were able to carve out a pool of funding to be spent on traffic signal activities that wouldn’t otherwise compete well against construction projects such as intersection improvements.”

—Local traffic engineer participating in Denver TSSIP
Case Examples: Getting Smart

• Agencies share knowledge to avoid “re-inventing the wheel” – saving staff time and money
  – NITTEC Incident Management Subcommittee members pool expertise to develop training program
  – Maryland SHA assisted Montgomery County in training arterial patrol staff and provided specs for vehicles
  – AZTech agencies use partners for advice on developing TMCs and purchasing wireless technology
Case Examples
You Ought To Know

• Agencies that share information in real-time can better inform travelers and prepare their own facilities.
  – High Plains Corridor Coalition states share information on road conditions to provide travelers early warning
Case Examples: Sharing the Wealth

• By sharing assets, agencies save money and boost their operations capabilities.
  – Vancouver VAST agencies share excess fiber assets as part of an inter-local agreement
  – High Plains Corridor Coalition states sharing cost of developing web-based traveler information network through Transportation Pooled Fund Study
Case Examples:
Building Economies of Scale

- Agencies benefit by consolidating services through reduced operating costs and enhanced services.
  - NITTEC provides member agencies with 24/7 traffic operations center
  - AZTech partners benefit from a regional emergency response team operated by Maricopa County DOT
U.S. DOT Planning for Operations Resources: The Collaborative Foundation
Regional Concept for Transportation Operations Fosters Planning For Operations in the Tucson Metropolitan Area

The Tucson metropolitan region embarked on developing a regional concept for transportation operations (RCTO) in 2005 as part of a Federal Highway Administration demonstration initiative to advance regional collaboration for operations. The RCTO is a management tool that assists operators and planners in strategically plan the improving operations in their region. Through the development of the RCTO, the Arizona Association of Governments (AAG) led a group of operators and public officials in implementing specific objectives and performance measures for arterial management, diverter information, and work zone management. These objectives guided Tucson’s selection of management and operations strategies and the approaches for implementation. The RCTO group identified specific operations projects to be included in the RAG transportation improvement program (TIP) and funded through a half-cent transportation sales tax, which passed in 2006.

Introduction
In 2005, the Federal Highway Administration (FHWA) launched a demonstration initiative in seven regions across the U.S. to increase multi-agency collaboration through the development and implementation of a regional concept for transportation operations (RCTO). The RCTO is a management tool that provides a strategic framework to guide collaborative efforts to improve transportation system performance through management and operations.

Applying Analysis Tools in Planning for Operations

Advancing Metropolitan Planning for Operations
The Building Blocks of a Model Transportation Plan Incorporating Operations

A Desk Reference
FOR MORE INFORMATION:

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Congestion Management Coordination in the Genesee-Finger Lakes Region

Joseph M. Bovenzi, AICP
Regional Models of Cooperation in Congestion Management
February 11, 2016
New York State Metropolitan Planning Organizations

Source: New York State Association of Metropolitan Planning Organizations (NYSAMPO)
Transportation System Management and Operations Program

- GTC emphasizes TSMO as a primary means of advancing its Goals & Objectives

- Activities
  - Long Range Transportation Plan
  - TSMO/ITS Strategic Plan
  - Transportation Management Committee
  - Regional ITS Architecture
  - Congestion Management Process
  - Transportation Improvement Program
GTC Approach to TSMO: Three Key TSMO Elements in the Long Range Transportation Plan

- Coordination
- Technology
- Demand
Coordination: Greater Rochester ITS Strategic Plan

- Identifies a vision for TSMO investments
  - Multi-agency
  - Multi-jurisdictional
  - Multi-modal

- Objectives
  - Rationale for TSMO investments ("Why?")
  - Roles & responsibilities ("Who?")
  - Operational strategies ("What?" and "How?")
  - Ten-year timeframe ("When?")
Coordination

- Coordination Goal: Facilitate interagency coordination and collaboration

- Transportation Management Committee (TMC)
  - Member Agencies
    - Transportation Departments
    - Transit Authority
    - Law Enforcement
  - Information Sharing and Discussion
    - Construction
    - Incident Management
    - Policy/Programming
Coordination: Traffic Incident Management

- **2015 Traffic Incident Management (TIM) Symposium**
  - Emphasis on Agency Roles & Responsibilities
    - Build awareness of agency functions among responders
  - **Session Topics**
    - First Responder Safety
    - Crash Reconstruction
    - HAZMAT Response
    - Extrication
    - NYS Move-Over Law
    - Large Incident Review

Coordination: NYS MPO Collaboration

- New York State Association of Metropolitan Planning Organizations (NYSAMPO)

- Eight “Working Groups”
  - Bicycle/Pedestrian
  - Climate Change
  - Freight
  - GIS
  - Modeling
  - Safety
  - TSMO
  - Transit

- Website: nysmpos.org
Technology: ITS

- **Goal:** Integrate ITS into the planning process
  - Enables coordination activities
  - Reduces infrastructure expansion needs

- **Identify agency capabilities**
  - Emphasize functions over specific technologies

- **Role of ITS in “Complete Streets”**
  - Impacts of Connected/Autonomous Vehicles
Demand: User Expectations

- Provide accurate and up-to-date information on options for using the transportation system
  - 511NY

- Greater Rochester Regional Commuter Choice Program

- Integrated Transportation - Land Use Planning
  - Municipal planning initiatives
Congestion Management Process (CMP)

- We cannot **build** our way out of congestion, but we can **operate** our way out

- Congestion Typologies
  - Recurring capacity related
  - Planned event-related
  - Non-recurring incident-related

- CMP Performance Measures
  - Travel Time Index
  - Transit on-time performance
  - Median incident clearance time
  - Median transit load factor
Congestion Management Process (CMP)

- Congestion Scale
  - Classify and illustrate congested road segments

| Congestion Scale for Recurring Capacity Related Delay |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| Categories:                     | Delay           | Excess Delay    |
|-------|-----------------|-----------------|-----------------|-----------------|
| Sub- Categories:                | Minimal Congestion | Minor Congestion | Moderate Congestion | Congestion | Severe Congestion |
| Color Code:                     | Green           | Green           | Yellow           | Orange         | Red            |
| Travel Time Index (TTI):        | <1.00           | 1.01-1.14       | 1.15-1.24        | 1.25-1.99      | 2.00>          |
Congested Links in the Morning Peak Period in the Rochester Metropolitan Planning Area

Sources: INRIX © 2015
NYS GIS Program Office, 2015
Congested Links in the Evening Peak Period in the Rochester Metropolitan Planning Area

Travel Time Index: 1.25 - 1.99

Sources: INRIX © 2015
NYS GIS Program Office, 2015
Travel Time Data Program

- INRIX Analytics
  - May 2013
  - Renewed May 2015

- Data Uses
  - Performance Measurement
  - Congestion Management Process
  - Special Analyses
TIP Project Evaluation Criteria

- Mainstream TSMO projects into the investment decision-making process

- Common criteria
  - All projects
  - 14 criteria (0 – 100 pts.)

- Mode-specific criteria
  - Projects classified into one of five modes
    - Highway & Bridge
    - Public Transportation
    - Bicycle & Pedestrian
    - Goods Movement
    - TSMO
  - Four or five criteria for each mode (0 – 30 pts.)
TIP Project Evaluation Criteria

➢ Transportation System Management and Operations

☐ Reduce travel times on major roadways (0 – 10 pts.)

☐ Reduce incident clearance times (0 – 10 pts.)

☐ Increase the productivity of regional transportation agencies/providers (0 – 5 pts.)

☐ Support or advance existing and/or proposed ITS elements (0 – 5 pts.)
GENESEE TRANSPORTATION COUNCIL

GENESEE TRANSPORTATION COUNCIL
50 West Main Street-Suite 8112
Rochester, NY 14614
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The Metropolitan Planning Organization for the Genesee-Finger Lakes Region
Delaware Valley Region

- Bi-state nine-county region of 352 municipalities
- Population: 5.7 million
- Employment: 2.6 million
Summary of DVRPC’s CMP

- Strengthens the connection between the Long-Range Plan and the TIP
- Performs analysis of the regional transportation network, identifies congested corridors, and develops sets of multimodal strategies for each congested subcorridor
- Where SOV capacity is being considered, coordinate on strategies and supplemental projects tables
- DVRPC Board adopted 4th edition in October, 2015
Advisors

• DVRPC’s Board is the ultimate adopting body. It includes both states, nine counties, and four cities

• CMP Advisory Committee includes technical representatives for all Board members, FHWA and FTA, transit agencies, transportation management associations (TMAs), other DVRPC committees such as the Goods Movement Task Force, surrounding and interested MPOs, and others
Types of CMP-Related Cooperation

- Launching a CMP or update cycle
- Implementing and maintaining momentum
- Participating in efforts that flow from the CMP
- Going beyond the CMP
  - Internal partners
  - Public and policy-makers
  - Professional field
Launching the CMP

Building trust and a shared base of knowledge are key

– Starting was the hardest part
– Flow from the Long-Range Plan regional vision and back into Plan updates
– Participation of trusted CMP voices, such as FHWA
– Think through which agencies and who will need to have been engaged for CMP to succeed
– Invite surrounding MPOs and agencies to be on the e-mail list for communication
“...I reflected on the technical materials you generate to facilitate the process—web maps & maps, strategy definitions, decision-making processes, and more. These materials form the basis for making collective, collaborative decisions, as well as a record of them. As communication devices, they are one of the keys to the CMP’s success....”
CMP 2014: Planning Time Index (PTI) in New Jersey (5-6 PM, all weekdays in 2013)

DRAFT

Goal: Increase Accessibility & Mobility

PTI on Limited Access Roads

Planning Time Index
- Less than 1.5 (basically reliable)
- 1.5 - 2 (slightly unreliable as expected at peak hour)
- 2 - 3 (moderately unreliable)
- Greater than 3 (seriously unreliable)

PTI on Arterial Roads

Planning Time Index
- Less than 1.5 (basically reliable)
- 1.5 - 2 (slightly unreliable as expected at peak hour)
- 2 - 3 (moderately unreliable)
- Greater than 3 (seriously unreliable)

A PTI of 1.5 means that for a trip that takes 20 minutes under free-flow conditions, a traveler should budget a total of 30 minutes to ensure on-time arrival 95 percent of the time. It is normal and appropriate for PTI to increase somewhat at peak hours.

PTI = \frac{95\text{th Percentile Travel Time}}{\text{Free-Flow Travel Time}}\)

*Free-flow values in this equation were determined using the reference speeds received by the VPP from their data providers for each road segment. Reference speeds represent the 85th percentile observed speed for all time periods, with a maximum value of 65 mph.*

For more information, see https://vprn.nj.gov/∼dvrpc/plan/selection/freight-performance-measures.

Archived operations data on arterial roads poses challenges. Experts are exploring how to account for intersections, driveways, and other characteristics. Data quality decreases as volume decreases. DVRPC may focus on arterials with more than one lane per direction and/or AADT > 15,000.

Source: Interstate Corridor Coalition Vehicle Plate Project Suite

Draft as of 1/23/15
Implementing and Maintaining Momentum

Keep building bridges

- Outreach meetings to various groups within DOTs
- Outreach meetings to help transit, TMA, and other supplemental project groups see why and how

• Federal requirements guide next steps
  - Supplemental projects
  - Reporting requirements
Diagram of the CMP process, three publications, and example of a checklist from the CMP Procedures, all available at DVRPC.org
Participating in Efforts Flowing from CMP

- There are a lot of related efforts to join
  - Congestion management at DOTs, operations planning, transportation security planning, transit

- Getting from medium-term CMP planning to projects on the ground requires participation in a lot of other processes
  - problem statement development, TIP
How the CMP Fits with Other Efforts

- **LONG-RANGE PLAN**
  - policies
  - regionally significant projects
  - program areas

- **CORRIDOR STUDIES**

- **SPECIFIC PROJECTS**

- **CMP (PROJECT LEVEL)**
  - is a project proposed by an agency consistent?
  - how can the project’s benefits be maximized?
  - problem statements / project proposals from CMP

- **CMP (PLANNING LEVEL)**
  - corridors
  - appropriate strategies

- **OTHER MANAGEMENT SYSTEMS**

- **SAFETY, MAINTENANCE, AND OTHER PROJECTS THAT DO NOT ADD CAPACITY; PROGRAMS**

- **TIP (TRANSPORTATION IMPROVEMENT PROGRAM)**
Beyond the CMP

- Internal partners (safety, operations, modeling, transit, corridor studies, land use, Plan, TIP)
- Public and policy-makers *(how to communicate is as important as what; includes interactive web maps and targeted newsletters)*
- Professional field (help an adjacent MPO, participate in FHWA efforts and I-95 Corridor Coalition, develop Partners Using Archived Operations Data for Planning)
Managing congestion is a hard in the 21st century - insufficient funding and ever-increasing traffic pose a challenge to providing an efficient transportation system for all. Fortunately, we now have a new generation of analytical tools, enhanced strategies, and better cooperation among organizations. Here's one of the many stories that illustrate the new era in managing congestion.

### The Story of One Corridor: I-295 in the Vicinity of I-76 and NJ 42

#### Recurring Congestion

On average, readers in 2000 spent 4.5 hours on the road, and it took almost twice as long as the average commute time. This is the average time spent daily.

![Average Travel Speed Graph](image)

**Average Speed Comparison**
- Standard Deviation: 22 MPH
- Travel Speed on Average: 45 MPH
- Travel Speed on Average: 55 MPH

#### Non-Recurring Congestion

Causes, reduction, and reduction are among the measures for reducing congestion. For example, in 2005, a study in a rural area showed that reducing non-recurring congestion can save time and money for commuters.

![Reliability Graph](image)

**Reliability**
- Mean: 70
- Standard Deviation: 5
- Confidence Interval: 95%

**Planning Indicators**
- "I need no budget triple the time!"
- "I need no budget triple the time!"

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**Effective, Low-Cost Strategies**

**Recurring Congestion**
- Traffic flow optimization
- Reducing traffic on I-295
- Average speed: 30 MPH

**Non-Recurring Congestion**
- Reduces travel time by 15%
- Reduces travel cost by 20%
- Benefits to motorists: reduced commute times, reduced fuel costs, increased productivity

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**Educate**
- **Travel time**
- **Reliability**

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[Source: New Jersey Department of Transportation (NJDOT)]

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**Justify and educate**

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**Tell a story**

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**Center of Elevator Speech Brochure**
A Few Other DVRPC Examples

- Incident Management Task Forces
- Central Jersey Transportation Forum (coordination of transportation and land use planning)
- Greater Philadelphia Food System Plan
- Equity Through Access (Coordinated Human Services Transportation Plan)
- Building the Circuit (Regional Trails Program)
Reflections on Cooperation

• Some reasons to cooperate
  – Helps with doing best possible, most effective work
  – Building a shared history and trust makes it easier to listen to each other, and builds a network for related work
  – Enhances a positive reputation to start future projects

• Think about where you want to end up, but advance in manageable steps so as to not get overwhelmed
For more information, see www.dvrpc.org/CongestionManagement or contact us:

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Regional Collaboration on Congestion Management

CONNECTING LAND USE AND TRANSPORTATION IN THE PORTLAND, OREGON METROPOLITAN REGION

Alan Lehto
Director of Planning & Policy
February 11, 2016
A little bit about the Portland, OR region

1.5 million people
25 cities
3 counties
1 region

60 miles light rail
15 miles commuter rail
79 bus lines

7 directly elected Councilors
17 member MPO Board

33,229 acres parks and natural areas
500 square miles urban growth boundary

Don’t just chase congestion – **Plan** for mobility and access
Building toward six desired outcomes

Vibrant communities
Equity
Economic prosperity
Transportation choices
Clean air & water
Climate leadership
Building upon local plans and visions
Regional Governance Structure

Metro Council

JPACT (local electeds & agency CEOs)

TPAC (staff & citizens)

MPAC (local electeds & agency CEOs)

MTAC (staff & citizens)

Federal MPO Function

Transportation

Technical

State Growth Management Function

Policy

Land use

Technical
PORTLAND REGION

CONGESTED

69 Hours

Spent in congestion per household

IMPROVED

37 Hours

Comparing the Alternatives
Getting there with choices

Disconnected Neighborhoods

- Drive Alone: 45%
- Drive with riders: 48%
- Transit: 2%
- Bike: 1%
- Walk: 4%

Connected Neighborhoods

- Drive Alone: 33%
- Drive with riders: 34%
- Transit: 9%
- Bike: 7%
- Walk: 17%

Data Source: Oregon Household Activity Survey 2011; analyzed by Kittelson & Associates, using Oregon Metro Land Use Typology
The Gift That Keeps On Giving

Data for Core Areas Points Toward Long-Term Benefits:

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<th>Survey</th>
<th>Number of Survey Hh</th>
<th>Mode Share</th>
<th>VMT/Capita</th>
<th>Veh/HH</th>
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<td>94-95</td>
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<td>27.0%</td>
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<td>Good Transit/Mixed Use (2)</td>
<td>2011</td>
<td>81 (4)</td>
<td>36.0%</td>
<td>44.3%</td>
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Congestion Management Process

- Integral component of the Regional Transportation Plan (Long-Range Plan)
  - Goal 1: Foster Vibrant Communities and Efficient Urban Form
  - Goal 2: Sustain Economic Competitiveness and Prosperity
  - Goal 3: Expand Transportation Choices
  - Goal 4: Emphasize Effective and Efficient Management of the Transportation System
  - Goal 5: Enhance Safety and Security
Data Resource Guide: Informing Decisions

Flexible Funding Allocation - Equity Analysis - MOBILITY

Travel speed on regional freight roadway network
2hr AM travel
MTIP 2016-2018
Metro

TRIOMET
PORTAL data archive supports monitoring

Extensive
- Freeway activity data
- Incident data
- Safety data
- Weigh in-motion data

Growing
- Transit data
- Arterial data
- Bike count data
- Pedestrian count data

Housed and managed at Portland State University in Portland, OR
http://portal.its.pdx.edu
Atlas of 24 mobility corridors displays existing conditions

- Transportation facilities
- Planned land uses
- Roadway level-of-service
- Transit coverage/level of service
- Truck volumes
- Bikeway and sidewalk gaps

www.oregonmetro.gov/mobilityatlas
State of safety report sets focus for action

Crash hotspots for all modes of travel

Source: Metro State of Safety Report (April 2012)
Report available at www.oregonmetro.gov/regionalmobility
Collaborative Programmatic Investments

Proactive Land Use
(2040 Growth Concept)

- Transit Expansion (HCT Bond, SIP TCMs, RTP/CSC)
- Transit-Oriented Development Program (TOD)
- Regional Travel Options Program (TDM)
- TransPort Committee and Regional TSMO Plan (ITS)

2019-2021 Regional Flexible Funds:
- Transit Expansion: $50M
- TOD: $10M
- TDM: $8M
- ITS: $5M

Other Projects That Meet the Six Desired Outcomes:
- Active Transportation/ Complete Streets: $37M
- Green Economy/ Freight Investments: $12M
Columbia River Crossing – cross-state collaboration – two-by-two
Coordination Case Study: I-5 Bridge Project

- Local, regional and national implications
- Governance:
  - Bi-State Committee
  - Steering Committee
Thank you! Questions?

Alan Lehto
Director of Planning & Policy
lehtoa@trimet.org
Questions?

• **Please enter your questions into the Q&A Pod on your screen**
  
  • The moderator will direct your question to the appropriate presenter.
  
  • Slides from today’s presentation are available in the download pod

• **For more information on the Regional Models of Cooperation initiative, please visit:**
  
Thank You!

• **For more information on the Regional Models of Cooperation initiative, please visit:**
  

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