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# **INVEST Implementation at the Tollway**

October 27, 2014

# Move Illinois Capital Program

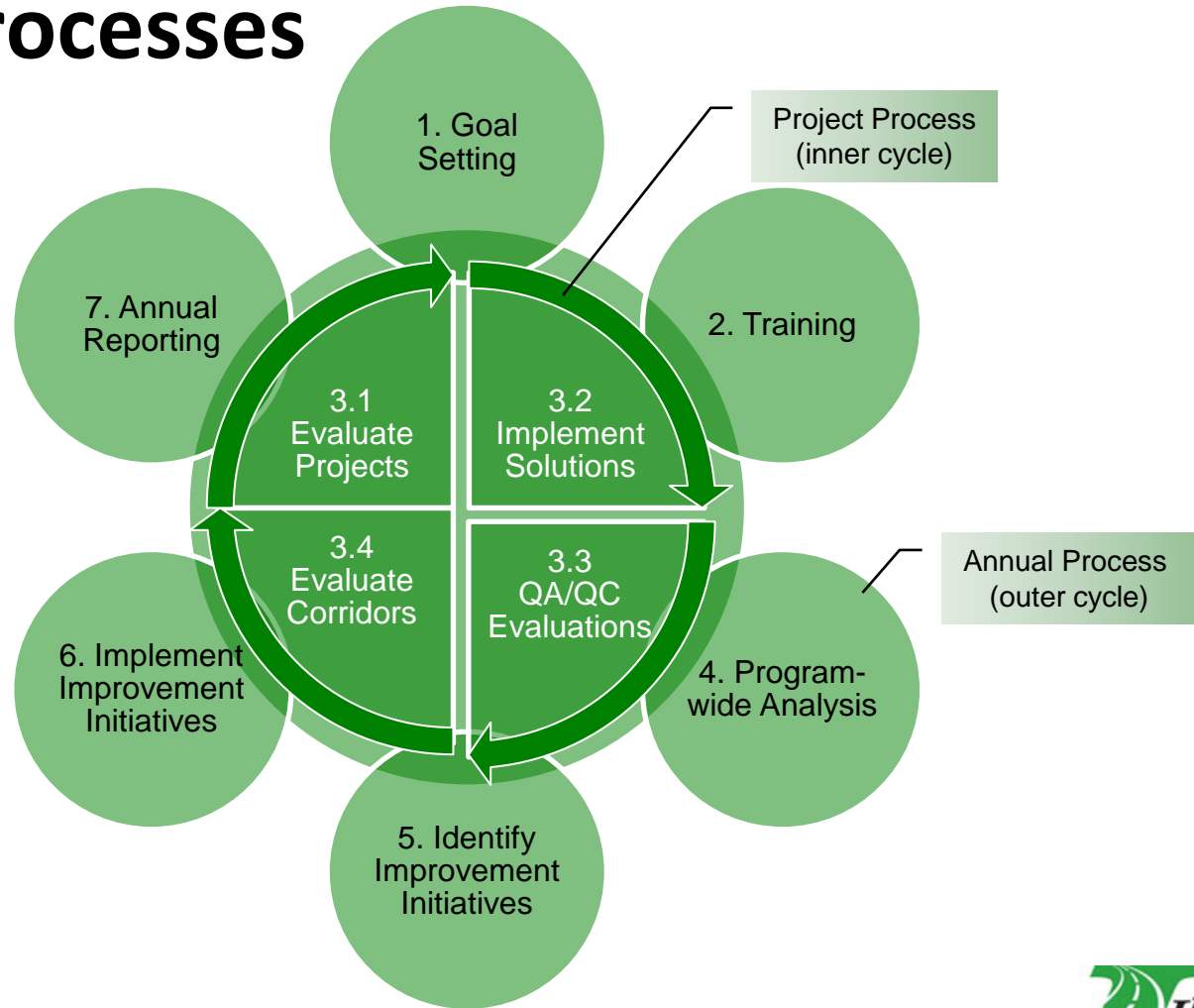


# Implementation of INVEST at the Tollway

- The Illinois Tollway has integrated INVEST throughout its processes
- Will use all three INVEST Modules
  - System Planning
  - Operations & Maintenance
  - Project Development
- INVEST will help the Tollway
  - incorporate sustainability into the program
  - measure progress
  - identify barriers to sustainability
  - report sustainability consistently to our stakeholders



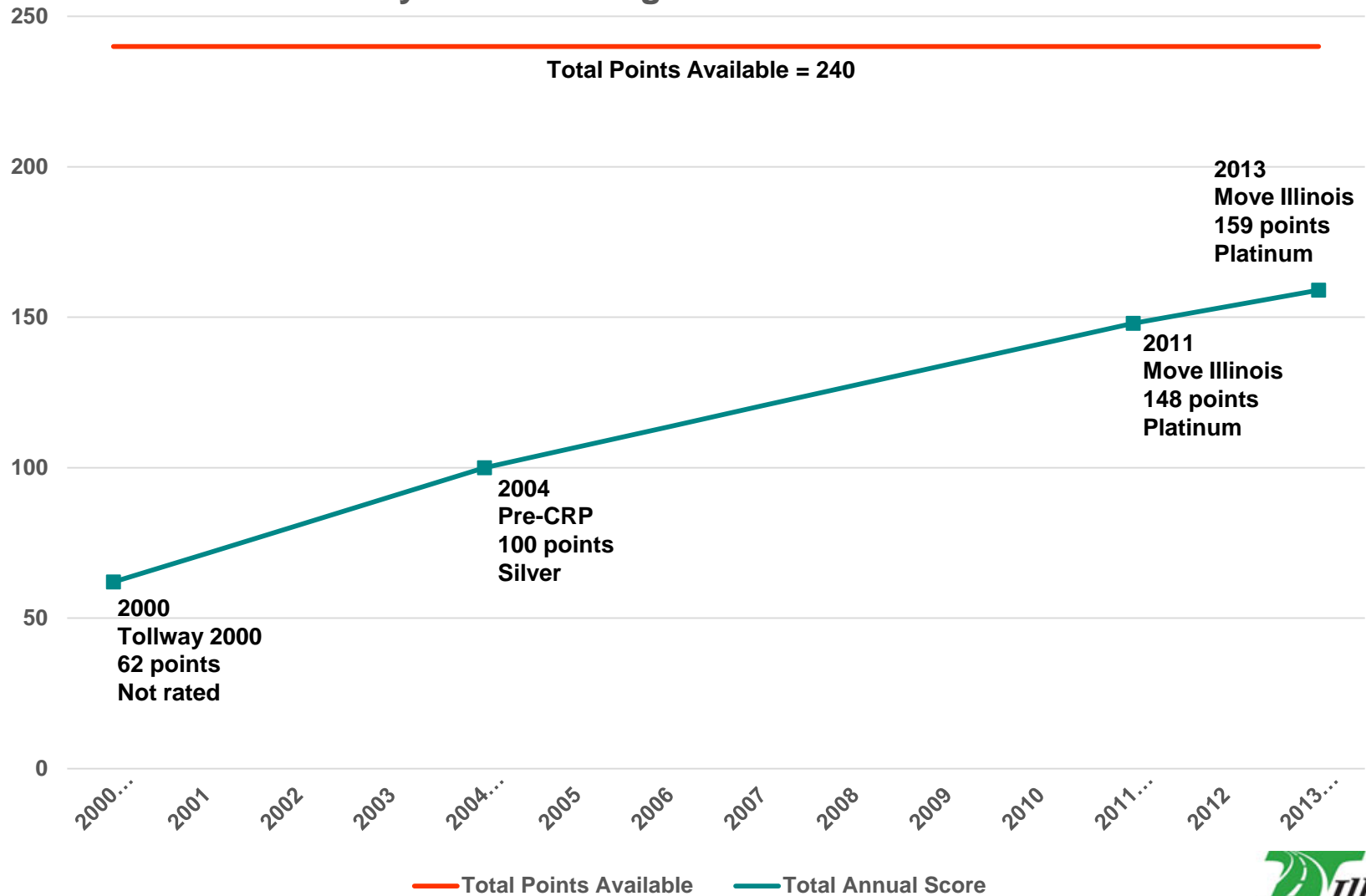
# INVEST Implementation – Annual and Project Processes



# System Planning

- **Sustainability evaluations were conducted on Tollway processes before INVEST was implemented, in order to obtain a baseline score**
  - the Tollway used for its most recent funding programs
  - each program showed steady progress on sustainability above the level of the previous one

# ILLINOIS TOLLWAY System Planning Baseline Scores



# System Planning Highlights

- **Demonstrating Industry Leadership**
  - Integrating planning with the three legs of the Triple Bottom Line of Sustainability (Social, Economic and Environmental)
  - Leveraging available technologies to improve capacity and efficiency of operations
  - Coordination with Operations & Maintenance and Project Development is positively affecting efficiency of delivery of Tollway projects

# System Planning Highlights (continued)

## ➤ Opportunities for Improvement

- Continue coordination with CMAP and positively affect sustainability of Analysis Methods, Air Quality, and Travel Demand Management in the region and at the Tollway
- Improve focus on the Reduction of Energy and Fossil Fuel Consumption of the road users
- Focus on Infrastructure Resiliency, including the use of Life Cycle Assessments of roadway components
- Climate Change Adaptation of Tollway facilities



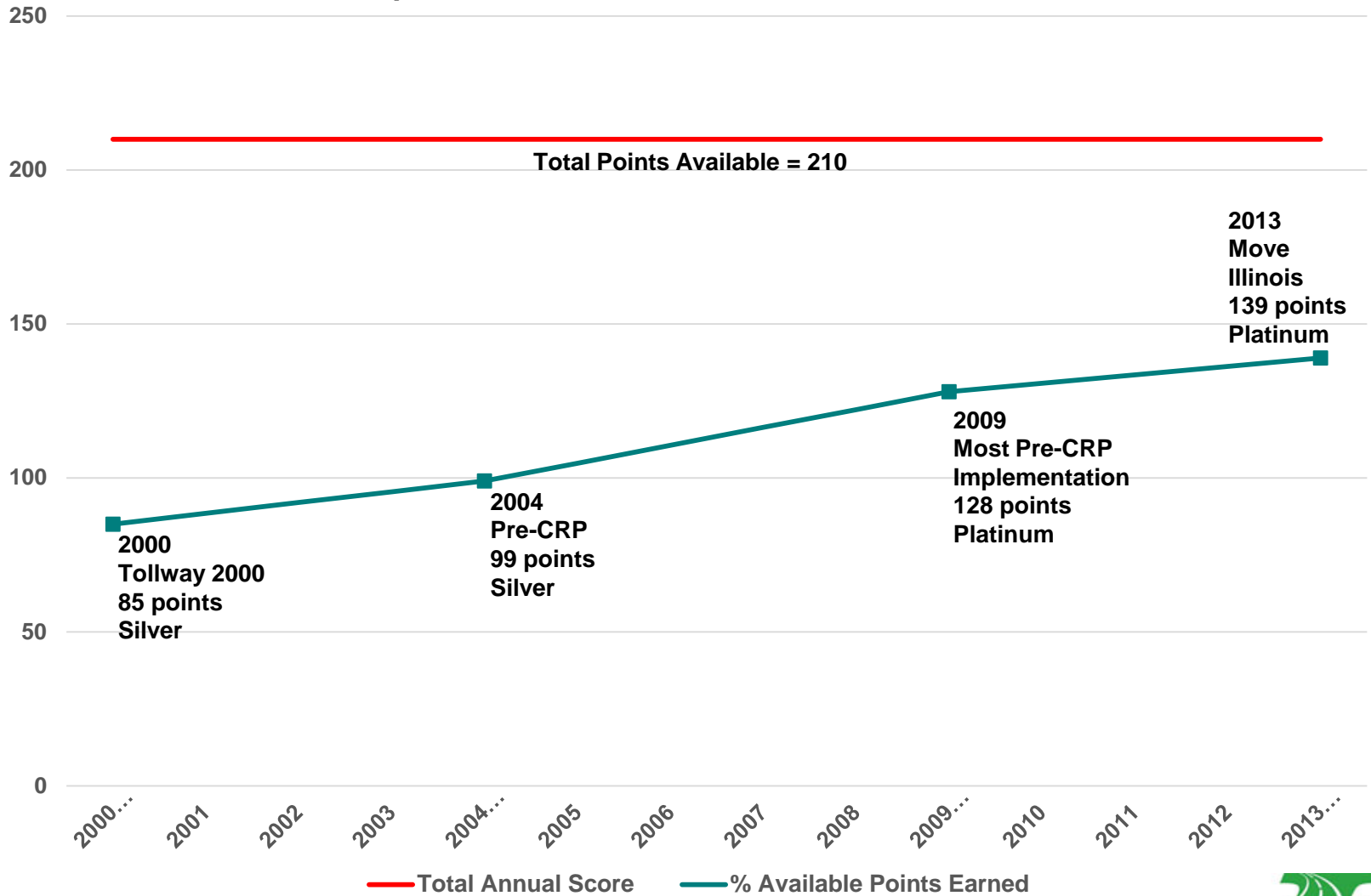


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# Operations & Maintenance

- **Decisions made in earlier System Planning and Project Development steps influence the sustainability of the infrastructure, including operations and maintenance**
- **Data collected in O&M in turn influences System Planning and Project Development**

# ILLINOIS TOLLWAY Operations & Maintenance Baseline Scores



# Operations & Maintenance Highlights

## ➤ Demonstrating Industry Leadership

- Leveraging data in Pavement and Bridge Asset Management system to evaluate the condition of roadways and provide input to planning and design (OM-7)
- Efficiently and sustainably performing snow and ice control activities (OM-12)
- Leveraging available technology for improvement operations and incident management (OM-13)

# Operations & Maintenance (continued)

## ➤ Opportunities for Improvement

- Focus on Internal Sustainability Planning and execution of daily activities
- Tracking commitments made during permitting, right-of-way acquisition, planning and design into design, construction and operations & maintenance
- More efficiently leverage the data in the Asset Management system to inform planning and design phases

# Project Development

- Tollway implementing FHWA's Project Development module as base for their program
- Tollway has made adjustments based on Illinois DOT's I-Last rating system
- Tollway has made adjustments based on Tollway-specific practices.

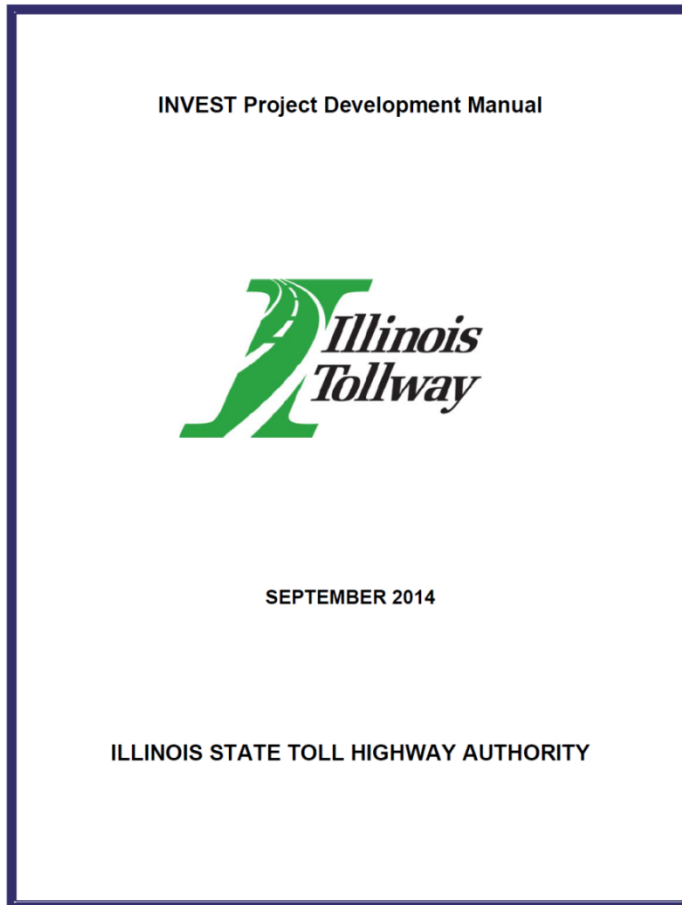


# Project Development

- The Illinois DOT has their own sustainability program: I-LAST
- Illinois stakeholders were influential in developing I-LAST
- The Tollway incorporated I-LAST measures into their INVEST program with the Tollway-specific supplements and criteria



# Tollway's INVEST Project Development Module



## Tollway's Project Development Module

- FHWA's 29 Criteria
- Tollway supplements to 10 of the FHWA criteria
- 8 Tollway-specific criteria

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# Tollway-Specific Criteria

- **PD-50T: Alignment Selection**
- **PD-51T: Visual Aesthetics**
- **PD-52T: Noise Abatement**
- **PD-53T: Reduce, Reuse and Recycle Materials (Design)**
- **PD-54T: Light Pollution**
- **PD-55T: Regional Employment**
- **PD-56T: Permeable Pavement**
- **PD-57T: Innovations**



# Tollway-Specific Supplements

- **PD-07 Habitat Restoration**
- **PD-09 Ecological Connectivity**
- **PD-10 Pedestrian Access**
- **PD-13 Freight Mobility**
- **PD-17 Energy Efficiency**
- **PD-18 Site Vegetation**
- **PD-19 Reduce and Reuse Materials**
- **PD-20 Recycle Materials**
- **PD-21 Earthwork Balance**
- **PD-24 Contractor Warranty (deleting)**



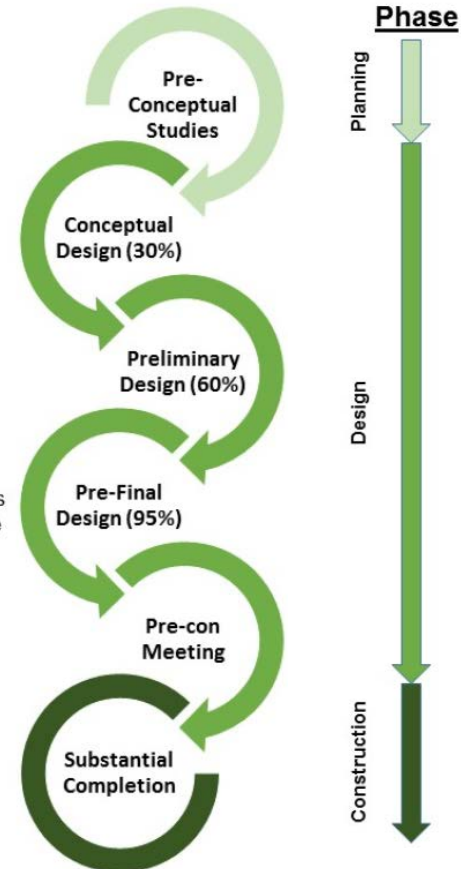
# Project Development

## ➤ The Tollway's INVEST Program consists of 10 steps

- Process is divided into planning and construction stages
- Submittals are required at each stage to ensure the process is followed

### Required Activities

- Brainstorm Sustainable Practices for Project
- Implement Sustainable Practices
- INVEST Evaluation to Establish Target INVEST Score
- Implement Sustainable Practices
- Implement Sustainable Practices
- INVEST Evaluation to Determine As-Designed INVEST Score
- Discuss Sustainable Solutions
- DSE Handoff to CM
- Construct and use Sustainable Practices
- INVEST Evaluation to Identify As-Constructed INVEST Score



# Project Development

- **Baseline Evaluations (before INVEST was implemented)**
  - More than 35 projects constructed between 1998 and 2014
  - Construction costs vary from \$400k to \$134M
  - Equal distribution of bridge, HMA and PCC projects
  - Equitable distribution of projects between Tollway's four capital improvement programs: *Tollway 2000*, *Congestion Relief Program*, *On Road Tolling*, and *Move Illinois*



# Project Development

## ➤ **Demonstrating Industry Leadership**

- Long-term economic analyses and financial sustainability (PD-1)
- Progressive investigation and use of methods to recycle, reduce and reuse materials (PD-20)
- Extensive use of available technologies to improve incident management, safety and operational efficiency (PD-14)
- Strong vegetative management planning (PD-18)
- Proactive earthwork balancing on projects and between projects (PD-21)
- Use of warm mix asphalt (PD-23)

# Project Development

## ➤ Opportunities for Improvement

- Consider Incorporation of Life Cycle Cost Analyses to inform bridge and major elements type selection
- Implementation of FHWA's newly released Highway Safety Manual
- Tracking commitments made during permitting, right-of-way acquisition, planning and design into design, construction and operations & maintenance
- Focus on reduction of energy consumption by project by reducing demand and adding renewable energy sources
- Focus on Contractor activities that promote sustainability, such as Environmental Training, Construction Noise Mitigation, Waste Management, etc.



# Future Project Development

- **Use of Life Cycle Assessment (LCA) – to develop a sustainability architecture for an objective environmental assessment of Tollway Construction Projects**
  - Pavement LCA
  - Drainage LCA
  - Structures LCA
  - Lighting LCA
  - Landscape LCA



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**THANK YOU**

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