

TRB Workshop 1056
Sunday January 12, 2020
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Adaptive Right-Sizing

BUILDING AND MANAGING A TRANSPORTATION
SYSTEM TO MEET EVOLVING NEEDS

Workshop Learning Objectives

Part I - Learn about methods to identify, evaluate, and implement right-sizing solutions that will unlock economic value and improve efficiency

NCHRP Project 19-14:
Right-Sizing Transportation
Investments—Methods for
Planning and Programming

FHWA Opportunities and
Trade-Offs of Disinvestment

Part II - Engage in exercises to explore right-sizing situations, key questions, diagnostics, and partnerships

Motivation

On the western edge of the Washington metro area

Loudoun County, Va., in 2012



Loudoun County, Va., in 2018



The World Has Changed...And Is Changing...

Source: The New York Times. A Decade of Urban Transformation, Seen From Above.

Near Houston, TX

Katy, Texas, in 2012



Katy, Texas, in 2018



The World Has Changed...And Is Changing...

Source: The New York Times. A Decade of Urban Transformation, Seen From Above.

Urban redevelopment in LA

South Park, Los Angeles, in 2009



South Park, Los Angeles, in 2018



The World Has Changed...And Is Changing...

Source: The New York Times. A Decade of Urban Transformation, Seen From Above.

The built environment of e-commerce in S.C.

Amazon facility in West Columbia, S.C., in 2009



Amazon facility in West Columbia, S.C., in 2015

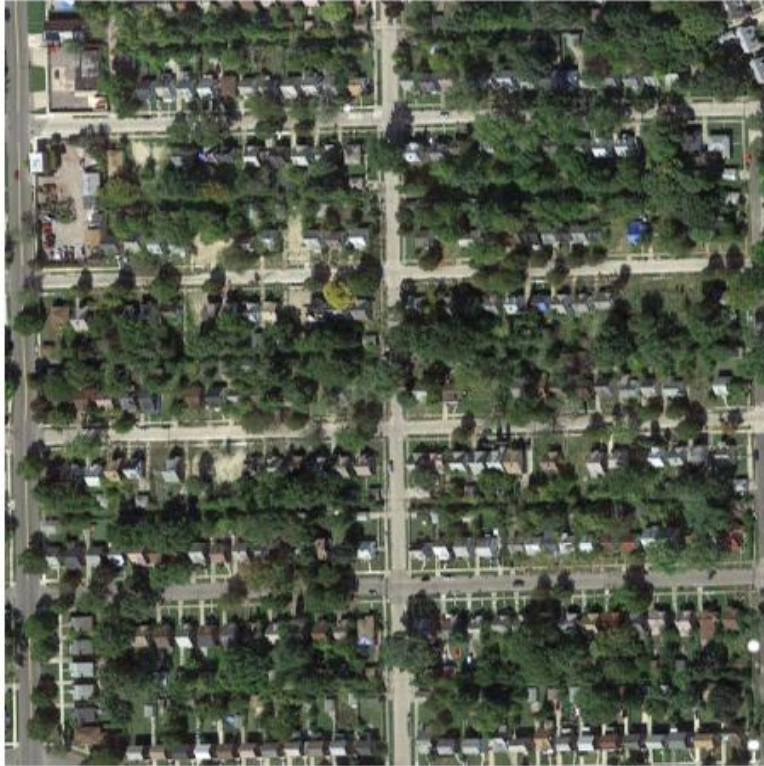


The World Has Changed...And Is Changing...

Source: The New York Times. A Decade of Urban Transformation, Seen From Above.

Where some communities grew, others shrank

Detroit in 2013



Detroit in 2018



The World Has Changed...And Is Changing...

Source: The New York Times. A Decade of Urban Transformation, Seen From Above.

And our mobility options have changed too

Reston, Va., in 2009



Reston, Va., in 2018



The World Has Changed...And Is Changing...

Source: The New York Times. A Decade of Urban Transformation, Seen From Above.

What is Right-Sizing? Why Do It?

Opportunities for Right-Sizing

With transportation agencies facing common challenges—aging infrastructure, unstable funding, and rapidly changing transportation markets and performance expectations—

decision-makers are challenged to develop and sustain an infrastructure portfolio of the appropriate size, function and composition.

Transportation agencies need practical and implementable methods to identify opportunities for “right-sizing” that will unlock economic value and improve the efficiency of infrastructure.

Wherever a transportation system is overbuilt, in the wrong place, or configured in an inefficient way – there is a potential right-sizing opportunity.

Right-Sizing v. Disinvestment?

Disinvestment

Only applies to existing facilities
Funding constraint motivation
Not necessarily a holistic approach (but can be)

Right-Sizing

Existing or planned facilities
Can include disinvestment
Holistic motivation to achieve the best and highest use
Paradigm shift

Defining and Understanding Disinvestment

- **Disinvestment:** partial or complete withdrawal of resources from *existing* transportation facilities that are deemed to deliver little or no gain for their cost
- Looks at long-term modifications in transportation facility use and maintenance to reflect new market needs and funding levels
- Often initiated by funding gaps and a need to reassess existing conditions
- Can be passive or active.

What is Right-Sizing?

RIGHT-SIZING

A process by which a transportation agency makes intentional decisions to adjust the size, extent, function and composition of its existing or planned infrastructure and service portfolio in response to changing needs over time.

- Can be implemented agency-wide or applied to specific programs and projects
- Avoid over-/under-build
- Match investment to market served and desired levels and forms of economic development and wellbeing
- Contribute to economically sustainable investments
- Create greater life-cycle value for society

Examples of Right-Sizing

The Tennessee Department of Transportation implements an initiative to strategically relax design standards, saving the department over \$170 M on the first ten projects under the new policy.

Rochester, NY transforms an under-utilized sunken section of expressway into an at-grade "complete street" with private development creating over \$250 M of value in the local economy in addition to millions more in life cycle cost savings

An initiative in Dallas, TX identifies opportunities to generate nearly \$500 M in development by re-aligning routes and re-using highway infrastructure -- boosting property values by about \$2.5 B, adding 40,000 jobs, and increasing property tax revenue by \$80 M

Before-and-After: Rochester Inner Loop East



Source: Stantec Consulting Services, Inc. on behalf of the City of Rochester. Rochester Innerloop 2013 (video screenshot). <https://youtu.be/ZluEwhJx7nE>
(Future development areas shown in purple)

[Click to return to section beginning](#)

Considering New Types of Decisions/Strategies

Normal Investment Decisions

- **Maintenance**
(to an *existing* standard)
- **Repair/Replacement**
(to an *existing/current* design)
- **Expansion**
(to an assumed *stable/certain* forecast)

Right-Sizing Decisions

- **Defer/Disinvest Through Non-Action**
(in effect, relaxing or waiving a condition/performance standard)
- **Modify the Design Standard/Target**
(intentionally reclassify asset & its role)
- **Replace the Asset**
(make it smaller/more economical)
- **Decommission an Asset**
(allow for re-use of land)
- **Relinquishment / Change Jurisdictions**
(better align objectives & ownership)

FHWA Opportunities and Trade-Offs of Disinvestment

DIAGNOSTICS FOR DISINVESTMENT SITUATIONS

FHWA Opportunities and Trade-Offs of Disinvestment

Synthesis
Report on
Methods

Modeling
Framework

Project Scope and Goals

- FHWA interested in looking at processes for disinvestment decisions
- Define disinvestment and document types, methods, data, processes and impacts of disinvestment on road transportation facilities, specifically highways and bridges
- Ultimate goal – understand disinvestment process and develop an analytical framework to evaluate scenarios and decisions

Passive vs. Active Decisions



Passive: Occurs through indirect policy intervention. May lead to new opportunities, but trade-offs between opportunities and impacts are not thoroughly examined



Active: conscious and structured policy choice of withdrawing resources from infrastructure assets and investing them elsewhere to manage funding limitations and achieve system-wide improvement in service and efficiency

I think I might need to disinvest...now what?

- Consider using the two-part **high-level framework** to systematically and comprehensively evaluate the decision

Part A

- Determine if a disinvestment strategy is a viable option

Part B

- Outline conceptual framework identifying key conditions and potential evaluation tools

Might Disinvestment be Viable?

- Evaluate your baseline conditions, agency goals, constraints and key decision criteria

FOLLOW THE STEPS BELOW

STEPS 1-5
outlines the
conditions
appropriate for
disinvestment

STEP 1

Why?

STEP 2

What goals?

STEP 3

What limitations exist?

STEP 4

How will you decide?

STEP 5

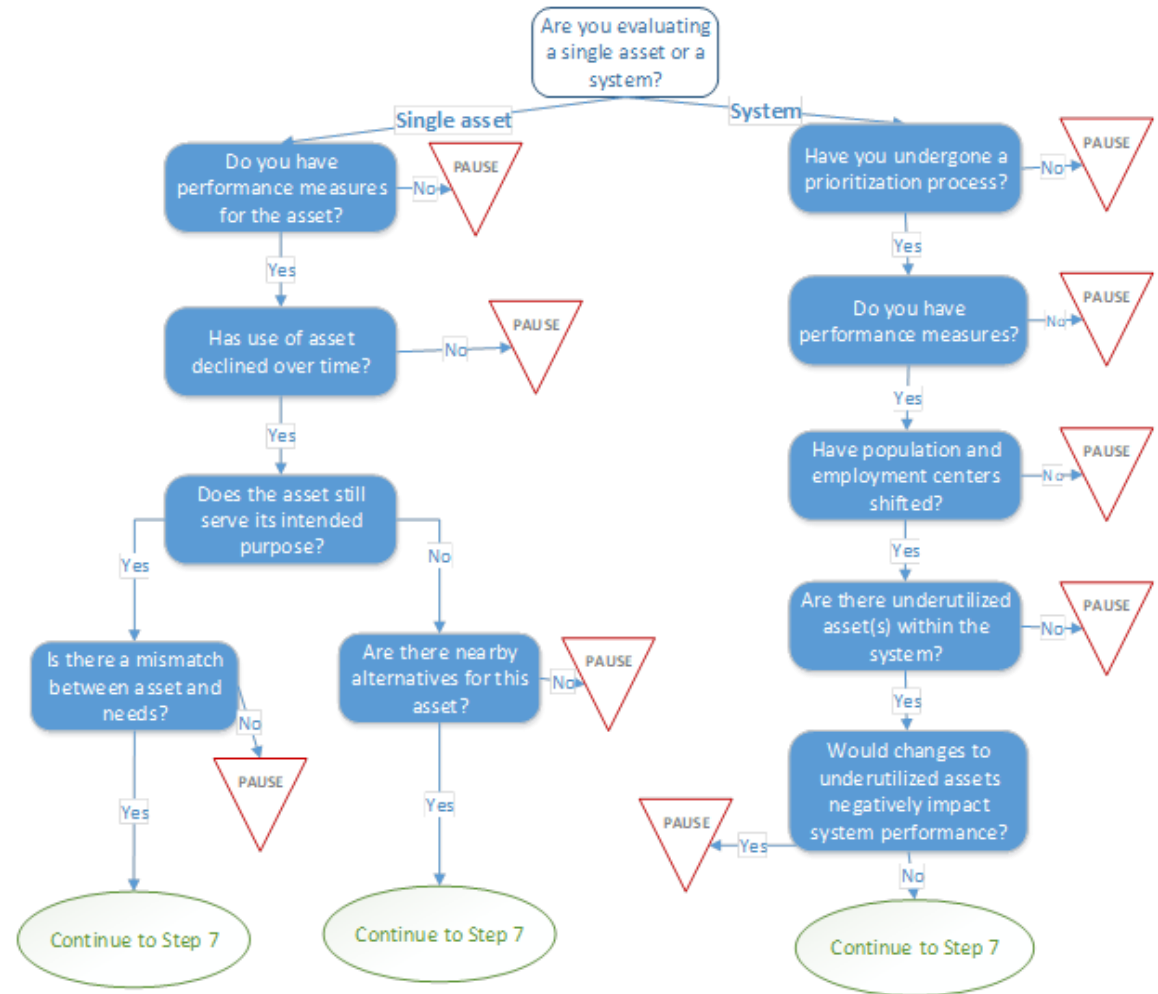
Could you complete all 4 steps?

If NO, STOP:
Disinvestment is not
a suitable option.

Answer Key Decision Questions

STEP 6

Answer key decision questions



Identify Major Economic Components

STEP 7



Identify key economic issues

- Population
- Employment
- Asset or system condition
- Environmental Impacts
- User expectations and cost impacts
- Land Use Impacts
- Agency Finances

Consider Available Analytical Tools

STEP 8

Collect relevant data to evaluate economic issues

Use appropriate tools to evaluate disinvestment impacts

- User costs and travel related impacts
- Economic impacts
- Asset condition and value
- Critical closeness accessibility (CCA)
- Network robustness index (NRI)
- Location-specific vulnerability index
- Sketch-planning tools and what-if analysis
- Available statewide models

Summarize Impacts



STEP 9

Summarize results and decide whether to disinvest

- Review outcomes to assess opportunities and tradeoffs
- Do the perceived benefits outweigh the potential negative impacts?
- Consider benefit-cost or financial analysis as means to summarize outcomes

NCHRP Project 19-14

FROM INDIVIDUAL DECISIONS, TO A RIGHT-SIZING PARADIGM

Products of NCHRP Project 19-14

Right-Sizing
Policy Guidance

Right-Sizing
“Toolkit”

The “Right-Size” Will Evolve Over Time

- There is no absolute “right size”
- Right-sizing addresses misalignments that arise due to factors that have either **evolved** since the legacy infrastructure was designed or may have been **overlooked** in the past.
- Right-sizing decisions pertain to **reaching alignment** among:
 1. The **owners** responsible for maintaining the infrastructure in the long-term
 2. The people or entities **paying** for the infrastructure
 3. The people or entities **using** the infrastructure
 4. The people or entities **making decisions** about the infrastructure

Proactively Recognize Change & Uncertainty

Economic (demand) risk

- Demand outpacing anticipated use (leaving a deficiency & imposing costs on users)
- Falling short of anticipated demand (leaving the agency with costs for an asset that can generate adequate returns)

Technology Risk

- Losing sunk cost of project to mitigate a problem that is resolved by advanced vehicle or other technological change before project can generate intended benefit
- Failing to invest in key infrastructure elements that will be required by newly emerging technologies.

Ask Key Questions At Every Step



E.g. Project Development:

Major reconstruction/replacement:

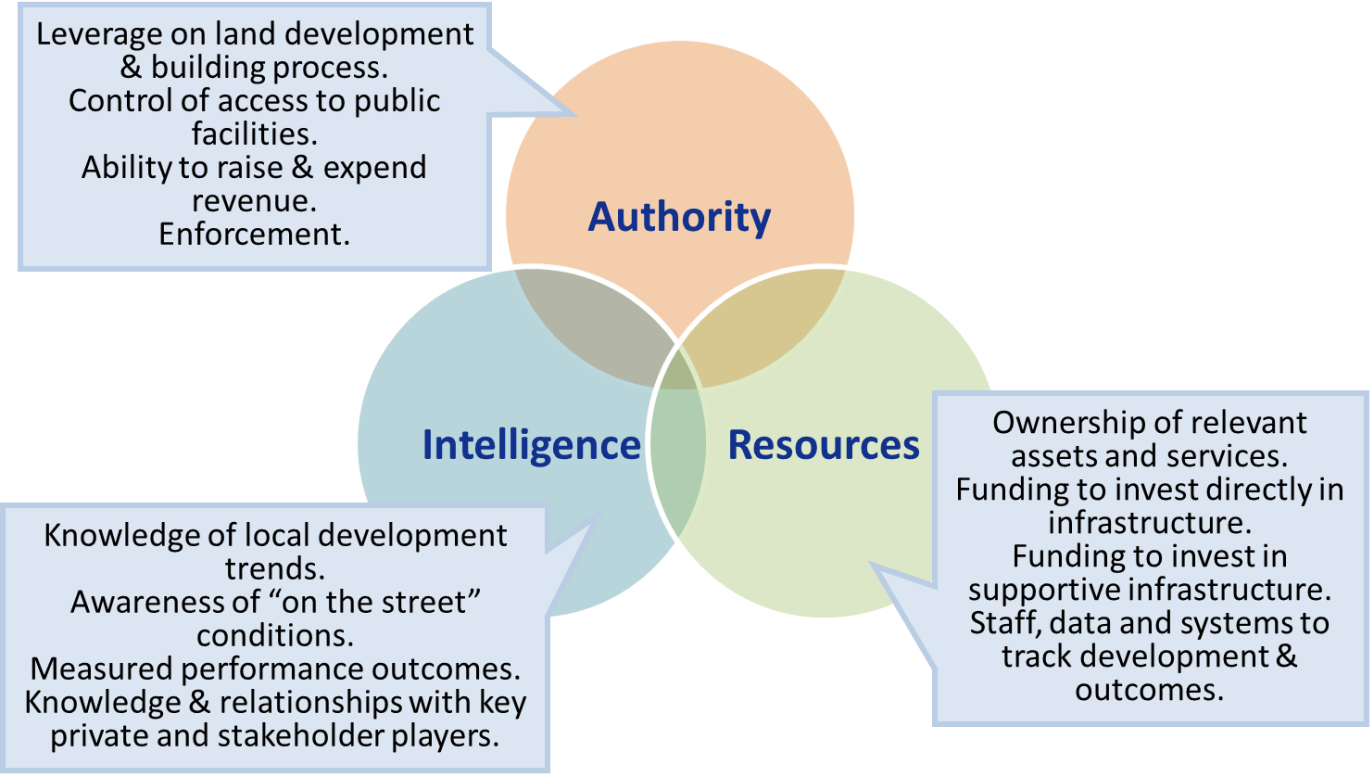
- What has changed about the underlying purpose and need for this asset/service since its construction?
- Are there issues related to efficient delivery or return on investment that may point to a different appropriate size/extent/composition/ownership?

Effective Right-Sizing Through Partnerships

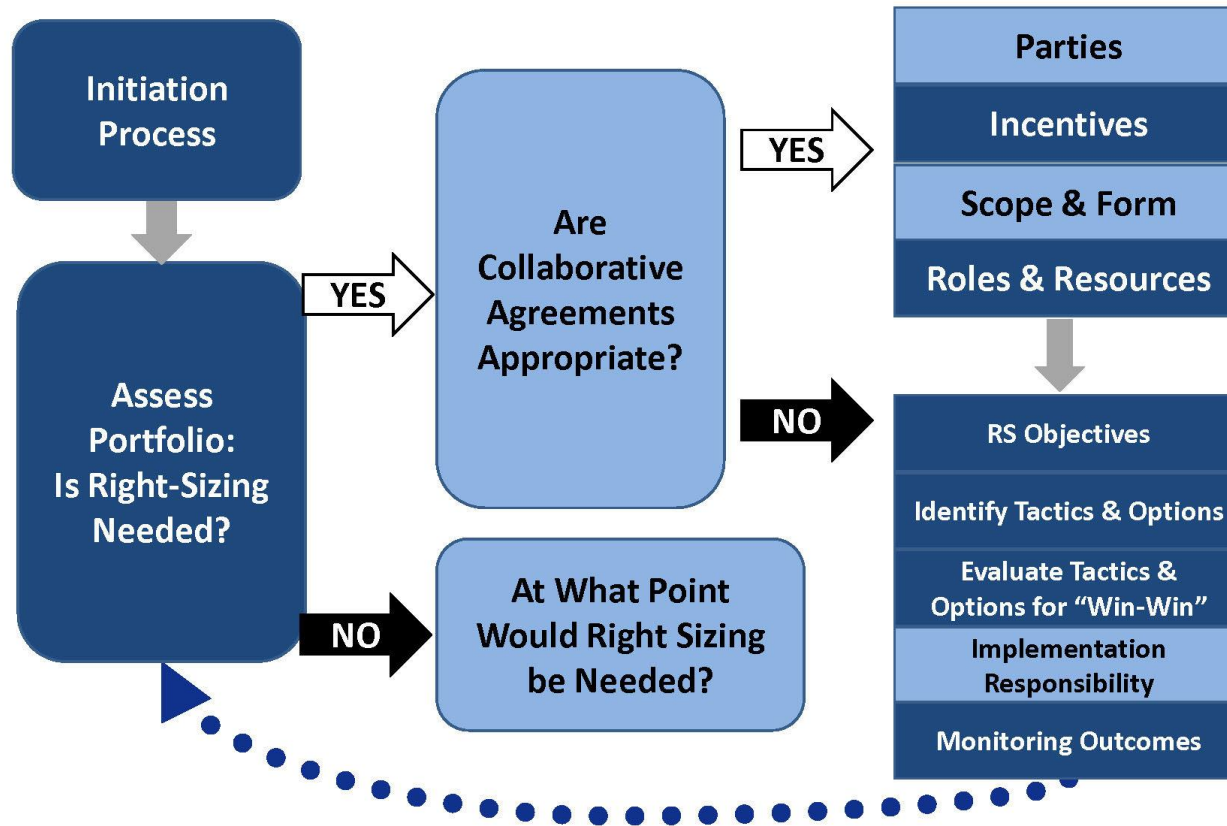
Effective right-sizing relies on a combination of three key elements:

- **Intelligence**, i.e. an understanding of changing conditions and needs that precipitate the need to right-size and the objectives of right-sizing
- **Authority**, i.e. the ability to take the necessary actions in support of right-sizing, and
- **Resources**, including ownership of relevant assets and services, as well as funding and staff resources to achieve right-sizing objectives.

Right-Sizing Can Mean Building New Connections & Skills



→ If these are not present in a single agency, right-sizing requires partnerships, such as between a DOT and city, or a city and a developer.



Policy Guidance/Business Model (Criteria/Checklists)
Both Policy & Technical Guidance

Roadmap for Right-Sizing

Right-Sizing Initiation

- Agencies have:
 - Asset management systems to flag a facilities that are ready for preservation treatments
 - Transportation partnerships and performance evaluation methods to identify deficiencies for undersized facilities

→ *But there is no generally accepted trigger for consideration of a right-sizing decision*

→ *Guidebook offers tools and methods for identifying right-sizing opportunities*

Right-Sizing Initiation Process Must:

- ☑ Provide a clear avenue for entities within or outside the agency to raise a potential right sizing opportunity.
- ☑ Not be limited to the creation of new projects or the preservation of existing infrastructure.
- ☑ Have clear criteria for when an asset, facility or system warrants a right-sizing process.
- ☑ Have clear roles, communication protocols, and timetables

Right-Sizing as a Matter of Policy

- Goal: provide a structure within which right-sizing scenarios can be identified and acted upon
- Clearly articulate why your agency is implementing right-sizing
- Cite specific examples of problems the policy is intended to solve and the expected benefits of solving such problems
- Differentiate right-sizing from other efforts by specifying goals in at least one of the following categories:
 1. *Reduce/Manage Life Cycle Costs*
 2. *Achieve Best and Highest Uses of Assets and Revenues*
 3. *Aligning Funding and Decision Making with Users and Beneficiaries of the Asset*

Discussion Questions

- In your region or within your agency, what are the biggest drivers of the need to right-size?
- What are some of the most important barriers you see to considering right-sizing strategies?
- What are the most promising benefits you'd expect from right-sizing in your region or within your agency?
- How do you currently evaluate infrastructure investment decisions? Are these methods transferable to disinvestment/right-sizing?

For More Information:

See www.trb.org

NCHRP Project 19-14

Right-Sizing Transportation Investments:
A Guidebook for Planning and Programming

Today's Agenda

- Jeff Harris – Reviewing the asset portfolio – a real experience
- David Hurst – Right-sizing your highway and bridge portfolio
- Chandler Duncan – Using modeling, visualization, and other tools
- Mike Brown – Right-sizing at the project level – Making the highest & best use of space and money
- Interactive Exercise