



# Financing Infrastructure in U.S. Cities

Municipal Fiscal Health Webinar Series  
November 2016



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Nicole DuPuis is the Principal Associate for Urban Innovation in the City Solutions and Applied Research Center at the National League of Cities. Her areas of expertise include infrastructure, technology, telecommunications and urban innovation. Throughout her career in urban policy she has published several articles and contributed to numerous research reports on these topics. She is also a regular contributor to NLC's blog, CitiesSpeak, on a variety of infrastructure and urban innovation topics. Follow Nicole on Twitter [@nicolemdupuis](#)

The National League of Cities (NLC) is the nation's leading advocacy organization devoted to strengthening and promoting cities as centers of opportunity, leadership and governance. Through its membership and partnerships with state municipal leagues, NLC serves as a resource and advocate for more than 19,000 cities and towns and more than 218 million Americans. NLC's Center for City Solutions and Applied Research provides research and analysis on key topics and trends important to cities, creative solutions to improve the quality of life in communities, inspiration and ideas for local officials to use in tackling tough issues, and opportunities for city leaders to connect with peers, share experiences and learn about innovative approaches in cities.



## Dr. Julie Kim

Program Director, P3 FLIP, Stanford Global Projects Center  
Senior Fellow, New Cities Foundation  
@GPCStanford

Dr. Julie Kim is Senior Fellow and P3 Program Director at Stanford University Global Projects Center (GPC). GPC's primary research focus is in infrastructure financing and effective engagement of the private sector, including institutional investors, in infrastructure space. Dr. Kim is also Urban Finance Fellow with New Cities Foundation (NCF). For NCF, she recently developed *Urban Infrastructure Financing Guidebook* to help cities and local governments around the world deal with impending infrastructure financing issues in the face of global urbanization trend. Dr. Kim was also Director of Asia-Pacific Infrastructure Initiative at RAND Corporation.

Prior to her research and policy-oriented work with GPC, NCF and RAND, Dr. Kim had over 25 years of hands-on experience in large-scale infrastructure projects in the U.S. and Asia as a senior executive with AECOM and URS Corporation. Among others, her areas of expertise were in large scale transportation and real property development projects, in the areas of planning, program management, and public-private partnerships (P3). Dr. Kim holds B.S. in Civil Engineering from M.I.T. and M.S. and Ph.D. in Civil Engineering from Stanford University.



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AND APPLIED RESEARCH

# **Paying for local infrastructure in a new era of federalism**

A STATE-BY-STATE ANALYSIS

# Overview

- Why Are We Here?
- The Infrastructure Deficit
- A New Federalism
- Who Pays?
- Funding Mechanisms
  - Local option sales taxes
  - Local option fuel taxes
  - Local option motor vehicle fees
  - Public private partnerships
  - State infrastructure banks

# Why Are We Here?

- Steep decline in infrastructure investment at the federal and state level
- End of useful lifecycle
- Funding mechanisms unsustainable
- Cities have unequal access to revenue sources

# A New Federalism



- Declining funding, increasing mandates, misaligned priorities at the federal and state levels
- Greater local responsibility for infrastructure
- Cities bound by levers authorized to them by states

# The Infrastructure Deficit

- 2.2 trillion needed over the next 5 years to get all of our infrastructure to a state of good repair.
  - Roads: 170 billion
  - Transit: 78 billion maintenance backlog
  - Water: 384.2 billion
  - Waste/stormwater: 1.3 trillion

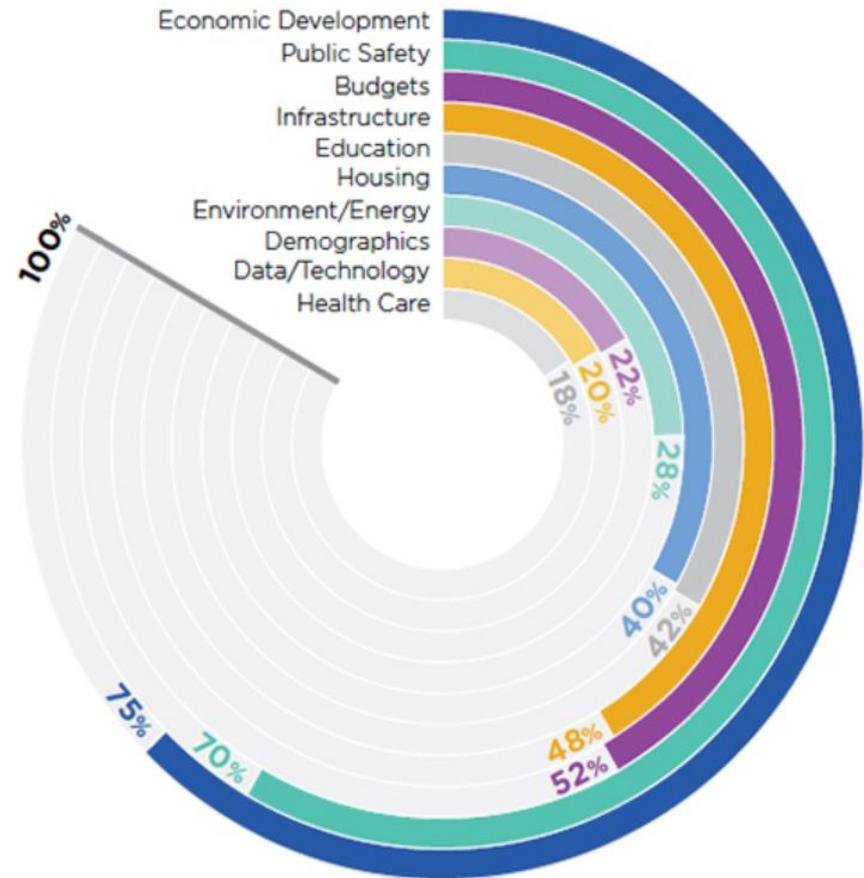
# Who Pays?

- In addition to maintenance backlog, there is now a looming pressure to invest in “smart” infrastructure
- Domino effect: Fed  State  Local
- Infrastructure managed/administered at the local level
- Shared responsibility

# Cities Feel Pressure

- 2013 Local Economic Conditions Survey
- 2016 State of the Cities

## Top 10 Issues

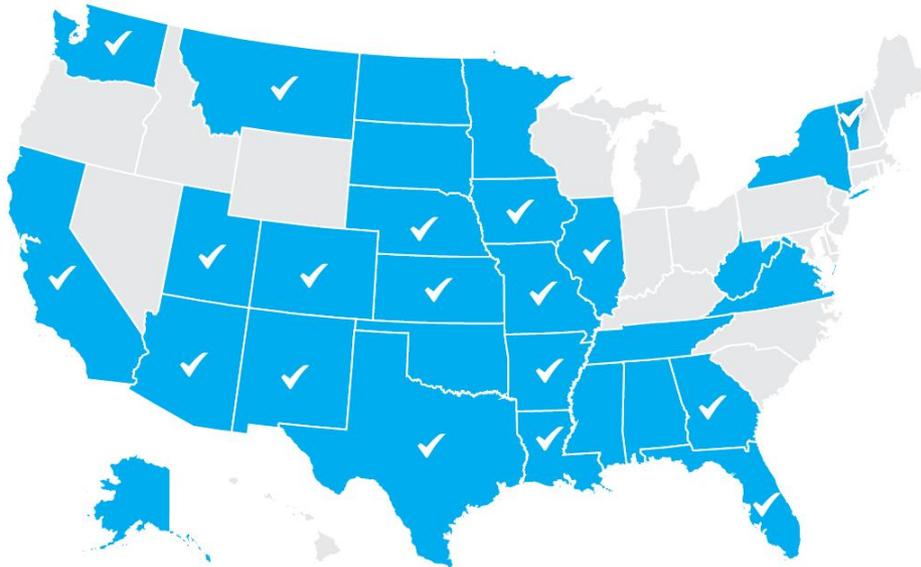


# Funding Mechanisms

- Traditional funding mechanisms no longer meeting the needs
  - Trust Fund insolvent
- Cities have unequal access to revenue sources



# Local Option Sales Taxes



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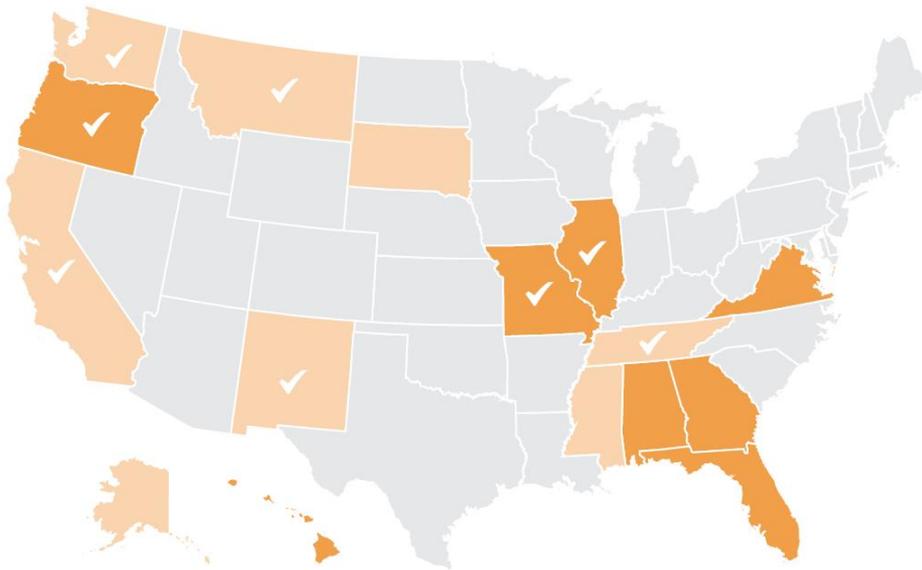
## Local Option Sales Taxes

- Authorized in 29 states
- The option is used by cities in all 29 states
- Voter approval required in 18 states

- 
-  Authorized
  -  Not authorized
  -  Voter approval required



# Local Option Fuel Taxes



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## Local Option Fuel Taxes

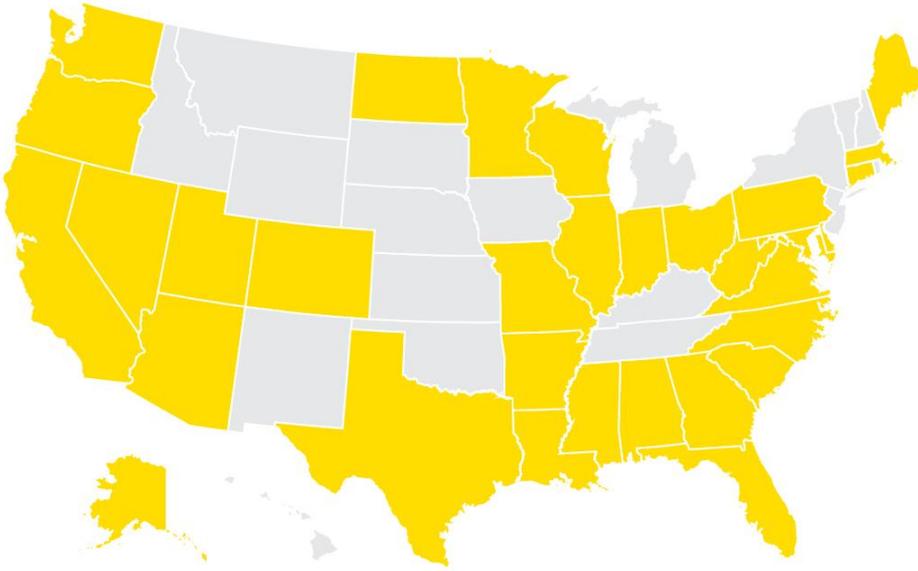
- Authorized in 16 states
- The option is used by cities in eight states
- Voter approval required in eight states

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- Authorized
  - Authorized-not used
  - Not authorized
  - ✓ Voter approval required





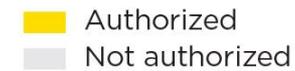
# Public Private Partnerships



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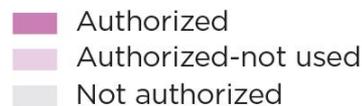
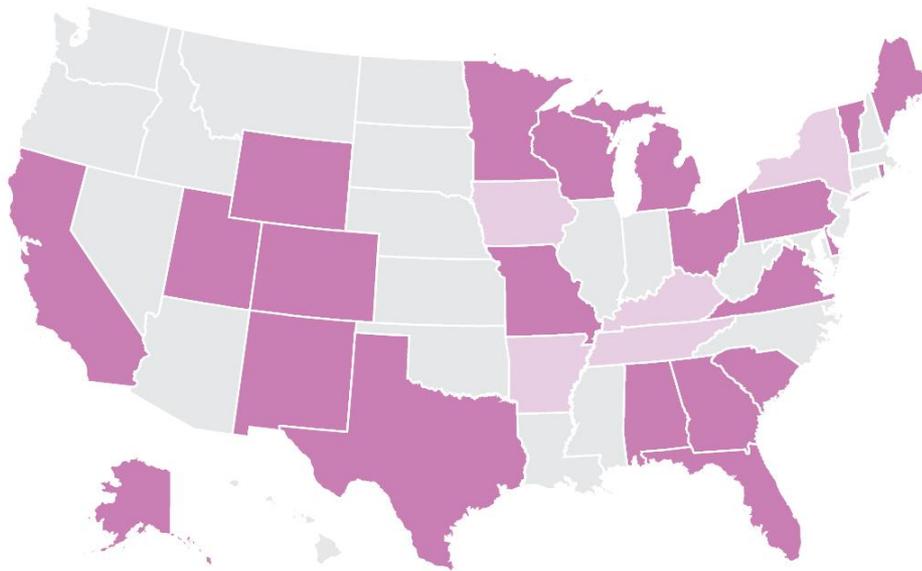
## Public Private Partnerships

- Authorized in 32 states
- Thirteen states are authorized for P3s for all types of infrastructure





# State Infrastructure Banks



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## State Infrastructure Banks

- Authorized in 27 states, 22 of which have active infrastructure banks
  - One state (California) deems roads, transit and water projects as eligible, while 15 states deem road and transit projects eligible. Four states deem only road projects as eligible, one state (Wyoming) funds water and roads and one state (Delaware) funds only water projects.
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# Questions? Contact us:

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Dr. Julie Kim

Stanford Global Projects Center

New Cities Foundation

# **Financing Urban Infrastructure An Overview**

***Municipal Fiscal Health Capacity  
Building Webinar Series  
Lincoln Institute of Land Policy***

***November 9, 2016***

**Julie Kim, Senior Fellow  
Stanford Global Projects Center (GPC)  
New Cities Foundation (NCF)**

# Global Urbanization Trend

## *Different Cities Face Different Challenges*



### Mega Cities

**Hyper-urbanization risk  
When is enough?**



### Mid-Size Cities

**Build capacity; 3E's (Emerging)  
Existential issues (Advanced)**

***Top 600 cities = 60% of future growth  
\$1 Infrast Invest = \$2 Econ Productivity***

# Infrastructure at the Heart of Urbanization

## *Different Sectors Have Different Needs*

### Urban Transport



- Need alternatives to private auto
- Heavy upfront capital for mass transit
- On-demand urban mobility solutions

### Water/ Wastewater



- Obsolete systems
- Complex institutional structure
- Politically sensitive, user charges difficult

### Power/ Energy/ Telecomm



- Established user-pay culture
- Private operator-government regulator
- Mature private sector financing

### Social Infra



- Health, education, justice, civic facilities
- No or insufficient revenue source
- Reliance on public sector funding

# Global Infrastructure Funding Crisis

## *Overall Demand-Supply Side Picture*

### ✓ Demand

- Funding needs:
  - Worldwide: \$57 to 67 trillion thru 2030 (75% urban area)
  - U.S.: \$3.6 trillion next 5 years
- O&M costs big part of funding needs, deferred maintenance
- Rural to urban migration: 1 million/week worldwide
- Funding responsibility shift from national to local government

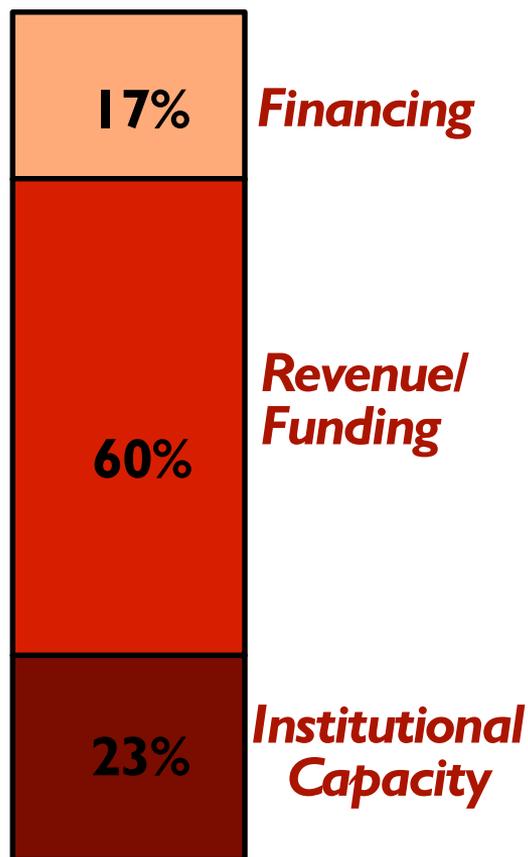
### ✓ Supply

- Too much money chasing too few “bankable” projects
- Institutional investors are allocating more and getting smarter
- Greenfield risky, brownfield pricey, “olive” assets now favored
- Big boost in debt market and more pioneering innovations

# Funding vs. Financing

## *There Is No Free Money; Funding Repays Financing*

### Levers for Reducing Infra Funding Gap



1. “Financing” will always be there if risk-return aligned
2. Problem is lack of bankable projects
  - Lack of revenues (“funding”)
  - Lack of institutional capacity
3. In the U.S., public finance limitations compounds problem
  - Statutory and political concerns about budget deficit
  - Legacy obligations, increasing revenue volatility
  - CapEx (greenfield) vs. OpEx (brownfield); deferred maintenance

# Primary “Funding” Sources for Cities

## *Where The Buck Really Stops*

### 1. Grants/Subsidies

- Multilateral development banks (“IFIs”)
- Intergovernmental transfers (federal/state taxes)

### 2. Local Taxes

- Property, sales, and/or income taxes
  - General vs. specific purpose; one time vs. long-term
  - Regressive vs. progressive
  - Voter approval
- Transportation-specific
  - Motor fuel tax: per gallon vs. vehicle-mile traveled (VMT)
  - Vehicle registration fees

# More Sustainable “Funding” Sources

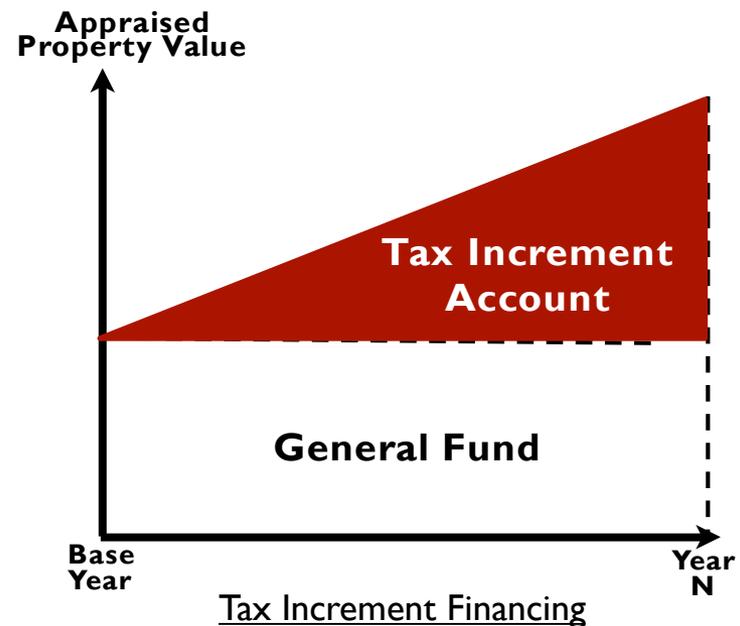
## *Most Promising for Cities*

### 3. Value Capture Approach

- Monetize future increase in property value from improvements
- Variations:
  - Tax increment financing (TIF), special assessments, joint developments, developer exactions

### 4. User Charges

- Potential new revenue source
- More cost-reflective, self-reliant
- Key to unlocking private capital
- Politically sensitive, “double taxation” issue



# Indirect “Funding” Solutions

## *Cost Savings and Asset Leveraging*

### 5. Reduce Funding Needs by Cost Savings/Efficiency Gains (O&M)

- Maximize usage: demand management, pricing strategy
- Increase efficiency: “green” sustainability initiatives
- Integrate: D-B/PPP lifecycle & “big data”/ERP approach

Smart  
City

### 6. Brownfield Leveraging/“Recycling”

- Monetize existing assets (sunken costs) thru long-term lease or asset sales
- Unencumbered proceeds used to fund greenfield infrastructure improvements (ex. Australia)
- Politically sensitive; public pensions on buyer side can help

# Primary “Financing” Methods for Cities

## *Raise Upfront Costs to Build Infra When Needed*

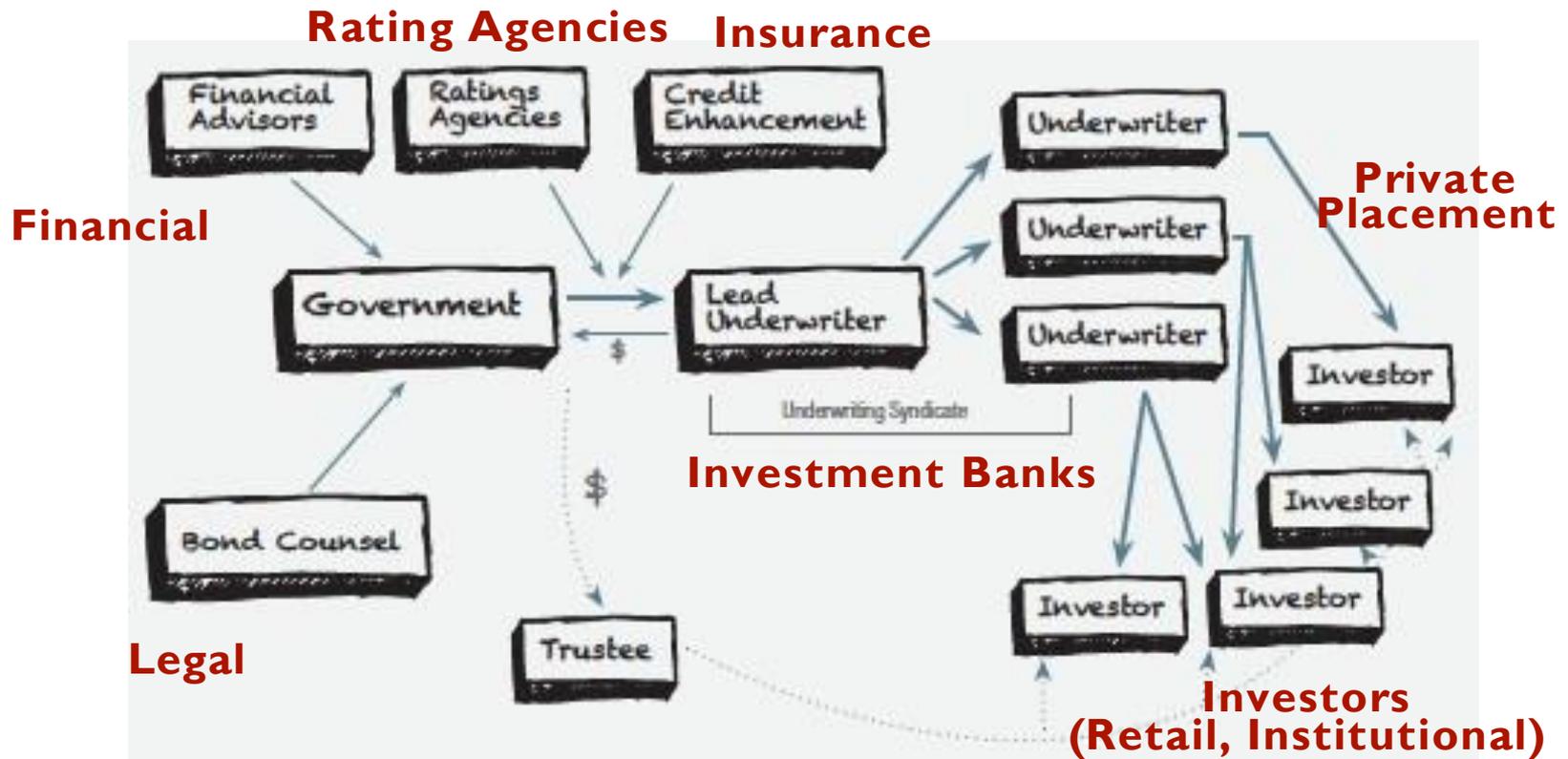
### I. Public Sector Financing

- Bonds (“Muni”):
  - General Obligation (GO) bonds
  - Revenue bonds (taxes, user charges, leases, savings, etc.)
  - Others: COP, GARVEE, tax-exempt vs. tax credit bonds, etc.
- Loans:
  - Concessional, “soft” loans
  - Bank loans: short- or long-term Revolving
  - funds (e.g., infrastructure banks)

- ✓ *100% debt financing, no equity and fully leveraged*
- ✓ *“Risk free” and cheap, taxpayer de facto risk bearer*

# Intermediaries Add Complexity

## Muni Bond Example



Source: Governing, *Guide to Financial Literacy*

# Alternative “Financing” Methods

## *Increasing Private Sector Role*

### 2. Private Sector Financing

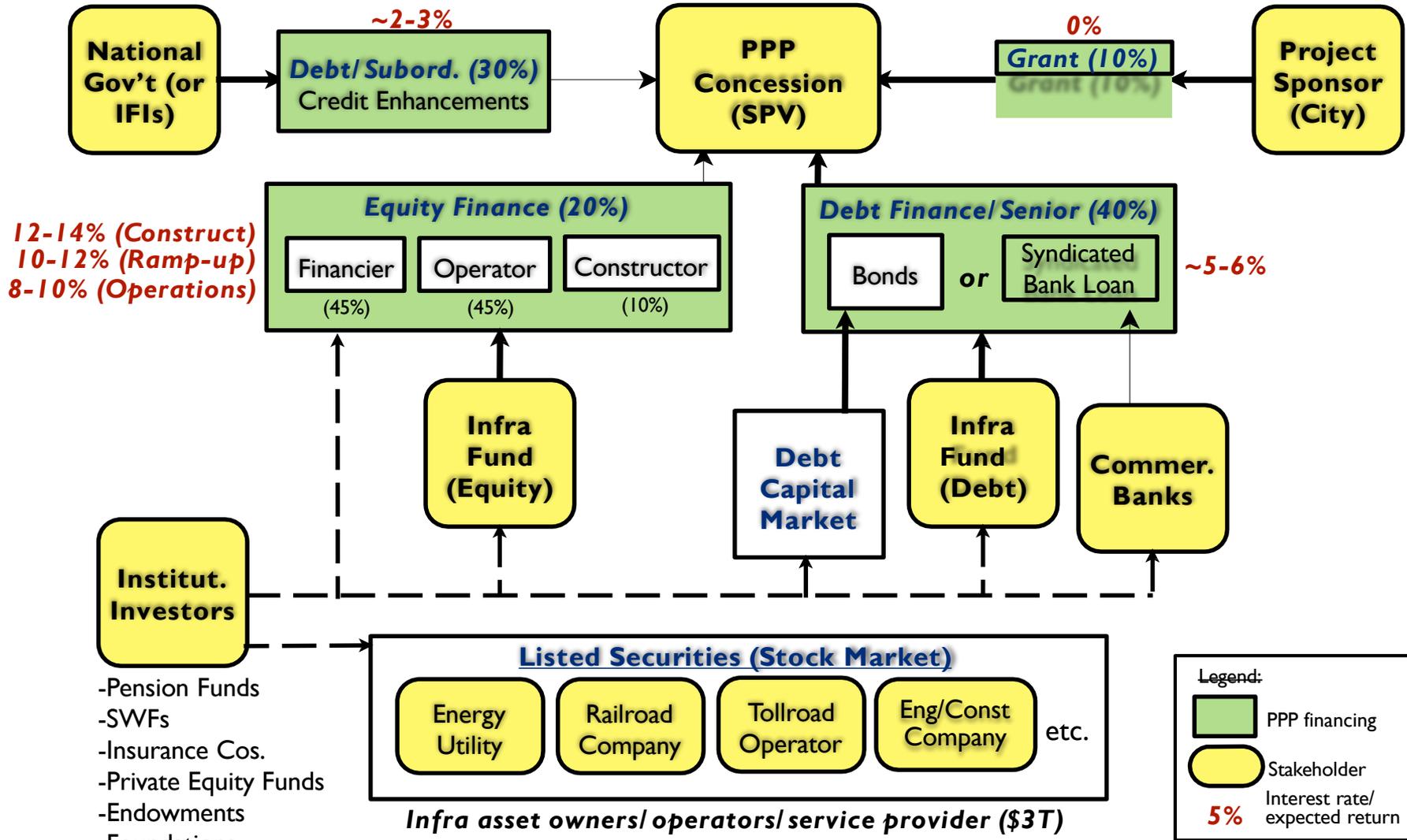
- Public-Private Partnership (PPP): Long-term concession thru non-recourse SPV
  - Lifecycle efficiency (D-B-O-M-F)
  - Revenue-risk vs. availability payment (AP) models
- Privatization: Partial or full divestment (asset sale or lease)
  - Vertical decoupling (government regulator-private operator)
  - Currently sellers’ market in favor of public sector
  - Effective regulation as good as ownership

✓ ***Mix of equity and debt financing, expensive***

✓ ***Optimum risk allocation for achieving best results***

# Complex Financing Structure

## PPP Example



12-14% (Construct)  
 10-12% (Ramp-up)  
 8-10% (Operations)

- Pension Funds
- SWFs
- Insurance Cos.
- Private Equity Funds
- Endowments
- Foundations
- Family Offices, etc.

# Other “Financing” Leveraging Tools

## *Reduce Financing Costs and Increase Liquidity*

### 3. Tax Incentives

- Tax-exemption (ex. muni and “green” bonds)

### 4. Credit Enhancements

- Guarantees (ex. PPP revenue guarantees)
- Insurance (ex. monoline, MIGA)
- Subordinate/“mezzanine” debt (ex. U.S.TIFIA)

### 5. Refinancing/Secondary Market

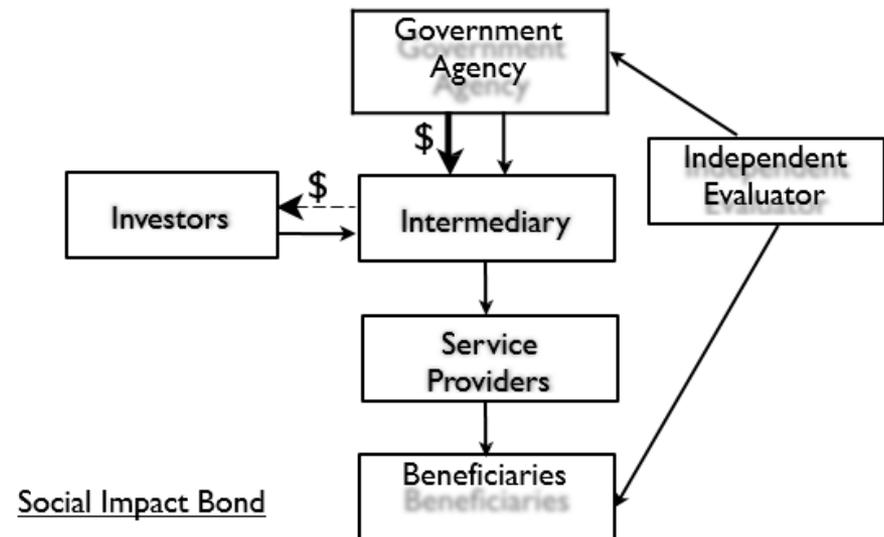
- Post-construction refinancing: reduces risk & increases liquidity
- Pooling & securitization (ex. ABS) help to replenish and reinvest despite negative perceptions

# New Emerging “Financing” Methods

## *Increasing Role of Non-Profit, Philanthropic Capital*

### 6. Socially Responsible Financing

- Social Impact Bonds (SIB) or “pay-for-success”
- Green bonds
- Carbon tax
- Cap-and-trade



# Global Best Practices and Innovations

## *New Revenues to Pooling Resources*

- Crowdfunding/Mini Bonds, U.S. & U.K.
- CEPAC Bonds, Brazil
- Local Government Funding Cooperatives, Scandinavia
- Pension Funds in Greenfield Space, Netherlands



# A Few Closing Thoughts

- Infra may be the weakest link—need multi-layered approach and “smart” innovations
- The buck stops with taxpayers and users—need compelling value proposition thru engagement



*“Volatility is the new normal”*



- In the U.S., revenue volatility and legacy obligations are constraints—can PPPs be used better?
- Governance matters—can “big data” and “enterprise” approach really help?

***Handbook on Urban Infrastructure Finance link:***

**[http://www.newcitiesfoundation.org/wp-content/uploads/2016/03/  
PDF-Handbook-on-Urban-Infrastructure-Finance-Julie-Kim.pdf](http://www.newcitiesfoundation.org/wp-content/uploads/2016/03/PDF-Handbook-on-Urban-Infrastructure-Finance-Julie-Kim.pdf)**



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Questions

## Additional Reading and Resources



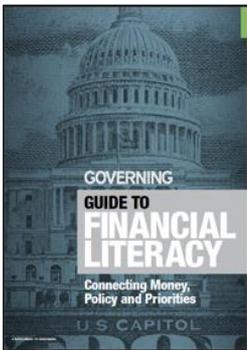
### Handbook on Infrastructure Finance

*New Cities Foundation*



### Paying for Local Infrastructure in a New Era of Federalism

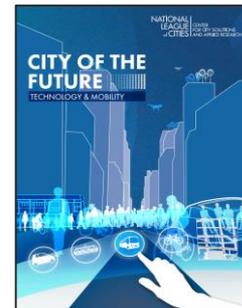
*National League of Cities*



### A Public Official's Guide to Financial Literacy

A Guide to Managing your Jurisdiction's Financial Health

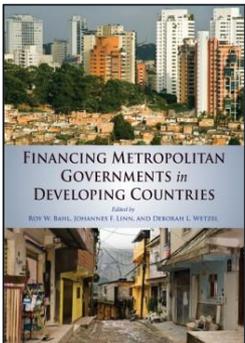
*Governing Magazine*



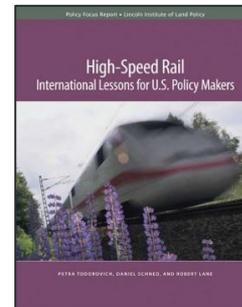
### City of the Future: Technology and Mobility

*National League of Cities*

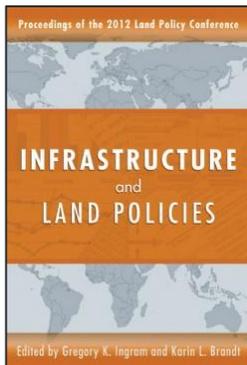
## Lincoln Institute of Land Policy Publications and Resources



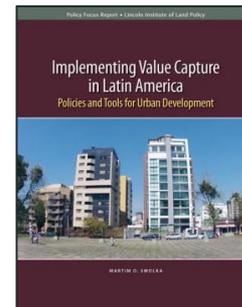
### Financing Metropolitan Governments in Developing Countries



### High-Speed Rail: International Lessons for U.S. Policy Makers



### Infrastructure and Land Policies



### Implementing Value Capture in Latin America: Policies and Tools for Urban Development

## **December: Session 2 Planning and Financing Successful P3s & Understanding Tax Exempt Debt**

**Join us to explore an innovative P3 model that has  
financed over \$2.5 billion in social infrastructure projects.**

# Thank you

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