

# Bus Rapid Transit in the United States



March 8, 2012

## Building a Business Constituency

Proceedings of a working meeting convened by the  
Center on Globalization, Governance & Competitiveness  
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Duke

CENTER on GLOBALIZATION,  
GOVERNANCE & COMPETITIVENESS  
*at the* Social Science Research Institute

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*Cover photo of Cleveland HealthLine BRT streetscape courtesy of Sasaki Associates, Inc.*

# Introduction

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Bus rapid transit (BRT) is public transit that can achieve the speed and efficiency of a subway, at only a fraction of the cost. In BRT, the bus typically travels in its own lane, receives traffic signal priority, and stops only briefly because passengers pay their fares before the bus arrives. Cities across the globe from Cleveland, Ohio to Curitiba, Brazil have adopted BRT with great success.

On March, 8, 2012, the Center on Globalization, Governance, & Competitiveness at Duke University convened thirty-five business and thought leaders focused on further developing the BRT industry in the United States. Funding was provided by the Rockefeller Foundation. Professional facilitator Meredith Emmett, of Third Space Studio, Inc., facilitated the proceedings, which are summarized in this report.

The meeting had two purposes: 1) to recognize the full value chain of firms engaged in BRT and begin to assess the scope of the market opportunity, and 2) to consider ways in which firms across the value chain can work together as an assertive industry to promote BRT in the United States.

The morning session focused on two ongoing BRT research projects, soliciting input from industry players about what kinds of data would be useful for advancing U.S. BRT. Researchers from the International Energy Agency (IEA) and EMBARQ presented their online international BRT database. CGGC researchers demonstrated a visualization tool for mapping out the BRT value chain and linking it in a user-friendly way to the full range of firms that provide the necessary services, vehicles, and equipment. These two presentations provided the foundation for a group discussion on what is needed to catalyze a business constituency for BRT.

The afternoon session included a presentation by a former director of the American Wind Energy Association (AWEA), followed by a discussion of lessons learned from the wind power industry and their potential relevance to BRT. Research from the Brookings Institution highlighted innovative finance mechanisms that could help finance future BRT projects as federal funding becomes less available. These presentations prepared the way for a final group discussion on collective and individual action needed to advance BRT and a business constituency.



# 10 Key Takeaways

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1. **BRT is a growing market in the United States and across the globe.** Researchers from IEA and EMBARQ presented a new global database, reporting that in 2011, at least 142 cities worldwide had BRT, buses with high levels of service, and/or bus corridors. Another 100 cities are planning or constructing BRT systems. Documented passengers per day now total at least 12 million, and more likely closer to 17.5 million. According to the length of announced trunk corridors, total network length is likely to double by 2020. Business participants welcomed the IEA/EMBARQ database, which could help make the case for BRT to industry players, policymakers, and the general public. Noting that definitions of BRT differ across the globe, participants encouraged the researchers to work with others such as FTA and APTA to create clear definitions of BRT and uniform formats to collect and report data.
2. **Disagreement remains about what is, and what is not, BRT.** Much work has been done to establish a clear, practical definition of BRT. This is crucial for many reasons. For instance, the way in which a definition is interpreted can have a substantial impact on eligibility for federal funds. Participants expressed differing views on whether the BRT definition established by the Federal Transit Administration (FTA) needs to be modified. Differing opinions were also expressed regarding whether setting a BRT standard could help or hurt the advancement of BRT.
3. **It is important to avoid pitting public transit modes against each other.** This point emerged repeatedly in different discussions. While participants supported working to advance BRT as a transit mode, many stressed it is vital not to make damaging or unfair comparisons with light rail or other alternatives.
4. **Although the BRT value chain includes a full range of firms, it is essentially a public transit value chain, with emphasis on firms directly relevant to BRT.** Most firms that provide products or services for BRT are also involved in light rail and other public transit. However, participants recognized the value of fully identifying firms with a potential stake in BRT. They suggested several additional categories for the draft diagram developed by CGGC.
5. **BRT business leaders can benefit from the experience of fast-growing clean-tech industries.** The U.S. wind power industry started as a group of hobbyists in a marginalized technology, and eventually transformed into a fast-growing industry with a forceful voice. Key lessons from the wind power experience: Be vigilant and out front on policy. Build partnerships with key federal agencies. Be political without being partisan. Systematically build support for stable, long-term policy. Remember: sustainability matters to voters and policymakers, but in tough decisions, economics will always trump the environment. Finally, use the power of visual branding (think wind turbines at sunrise) to shape public opinion.
6. **Ongoing cuts in federal funding highlight the need to identify innovative finance mechanisms and to recognize the associated private sector players that drive them.** BRT and other public transit projects will have to look increasingly to innovative financing mechanisms. It is useful not

only to understand the different mechanisms for private investment and value capture, but also to identify the firms that could potentially find these arrangements attractive. Participants emphasized the importance of transit-oriented development (TOD), and the need to link TOD directly to value capture mechanisms. A “roadshow” of successful BRT projects would help potential investors better understand the value and risks of investing in such ventures.

7. **If a business constituency were to organize in the interest of advancing BRT, it could start by doing a lot of defining and educating.** Participants noted a number of important objectives: establish a clear definition of BRT that recognizes the diverse transit needs of communities; develop the business case, including return on investment; educate elected officials and metropolitan planning organizations (MPOs) about the potential of BRT; promote policy models for complete streets and (TOD); create a repository of model language and showcase projects to help elected officials, the public, and investors understand TOD; identify ways that BRT can help grow the total funding pot for all transit modes.
8. **A BRT business constituency could support important public policies at all levels—federal, state and local.** Participants named the following: eliminate mode bias in legislation; provide funding for infrastructure and operating assistance; change axle weight restrictions to allow for more BRT; pass enabling legislation for public private partnerships; create tax incentives; create infrastructure banks; modify procurement procedures to shorten project development cycles; encourage complete streets. Finally, set parking caps and implement land use policy to incentivize increased density.
9. **Business leaders expressed interest in forming an assertive BRT constituency of some kind, although the future home for such an endeavor was not identified.** Whether it makes sense to develop a business constituency focused specifically on BRT—as opposed to focusing more generally on public transit—was not resolved at this meeting. However, several potential “constituency” conveners were mentioned, including APTA, National Bus Rapid Transit Institute (NBRTI), National Association of Counties (NACo), Association of Metropolitan Planning Organizations (AMPO), and National Governors Association (NGA). Those present expressed a strong desire to avoid re-creating institutional infrastructure. Leadership and a common vision are crucial.
10. **Participants named many steps they are willing to take--in networking, research, and advocacy--to advance BRT.** Participants’ own next steps included the following: network with others in the BRT industry; advocate to improve the language defining BRT in the transportation bill; push for more federal, state and local funding; help create the business case for BRT; advocate to reconstruct and strengthen APTA’s BRT committee; seek opportunities to partner with environmental organizations; offer tours of BRT manufacturing plants for policy makers and make cool new BRT vehicles available as demonstrators. Finally, a three-word step: Get projects done!

# Morning Session

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## Assessing the BRT Market Opportunity

**Presenters: Tali Trigg, International Energy Agency; Aileen Carrigan, EMBARQ**

(EMBARQ is a program of the World Resources Institute (WRI))

Tali and Aileen introduced a new online database of BRT systems worldwide, a joint effort of IEA and EMBARQ, which will soon be available as Global BRT Data, at [www.brtdata.org](http://www.brtdata.org). The presenters noted some difficulty classifying what is BRT, since definitions often vary within countries, as well as from one global region to another.



BRT has grown dramatically since 2000. EMBARQ reports that in 2011, at least 142 cities worldwide had BRT, buses with high levels of service, and/or bus corridors. Another 100 cities are planning or constructing BRT systems. According to IEA, documented passengers per day now total at least 12 million, and more likely closer to 17.5 million. According to the length of announced trunk corridors, total network length will likely double by 2020.

### Discussion

*Participants expressed appreciation for what may become an authoritative source of BRT data globally.*

*The database could be used to do the following:*

- Inform and educate policymakers and the general public; justify public funding and private investment; document potential job creation and job access
- Document performance measurements such as reductions in energy use and carbon emissions
- Aid in the design phase, showing potential characteristics and helping to size a fleet for ridership
- Learn from the experiences of others; identify market potential; organize cooperative purchasing; planning for equipment replacements

*Suggestions to expand or improve the database:*

- Include data on all capital and operating costs, to make fair comparison with other transit modes
- Include data on jobs, station locations, corridor descriptions (helpful to a variety of stakeholders)

*Since there is no global standard BRT definition, and no standard format for reporting, participants made suggestions for collecting reliable data:*

- Work with others such as FTA and APTA to create clear definitions for BRT and uniform formats for collecting and reporting data; be transparent on metrics included or omitted
- Update the database regularly and ensure that the data will be comparable to other transit modes

## Visualizing the BRT Value Chain

### Presenters: Marcy Lowe and Monica La, (CGGC)

(Center on Globalization, Governance & Competitiveness)

Value chain analysis enhances the traditional supply chain view of an industry by layering on value-added activities and supporting industries, identifying lead firms, and finding points of leverage to drive an industry forward. Marcy's team at CGGC has used the value chain framework to map out a series of clean-tech industries, including smart grid, railcar manufacture, and lithium-ion batteries for vehicles.

Marcy and Monica presented a new, interactive visualization tool for presenting the database they are constructing on the BRT value chain (see diagram on next page). The web-based tool makes clear the full extent of the value chain, identifies the firms involved, and links them to the features that distinguish a BRT system from regular bus service. The researchers hope the tool will enhance awareness and understanding of BRT among stakeholders, policy makers and industry leaders.



### Discussion

#### Suggestions to add to the value chain:

- Planning, research, and oversight by the public sector and private firms
- Major employers, elected officials, bus riders, and the electorate
- Energy suppliers, bus maintenance facilities, traffic engineering, data collection and performance monitoring, the communications and marketing part of program management, service planning, sovereign wealth funds, REITS, and land acquisition

#### Suggestions to improve the value chain:

- Focus the value chain generically on public transit, emphasizing BRT-relevant firms; most firms are mode-neutral. Exception: vehicle manufacture, where there is a need for special BRT buses
- Create a U.S. map showing locations of APTA membership and additional firms
- Calculate the value of each column of the chain
- Include project cycles and the project development process
- Reorder the six columns to put manufacturing and construction at the end
- Improve the streetscape diagram. See visuals in Sasaki's photo essay of Cleveland's BRT system: <http://www.sasaki.com/project/105/cleveland-euclid-avenue-healthline-brt/>

# Bus Rapid Transit

What features constitute BRT, and what kinds of firms provide them?

## BRT System Features

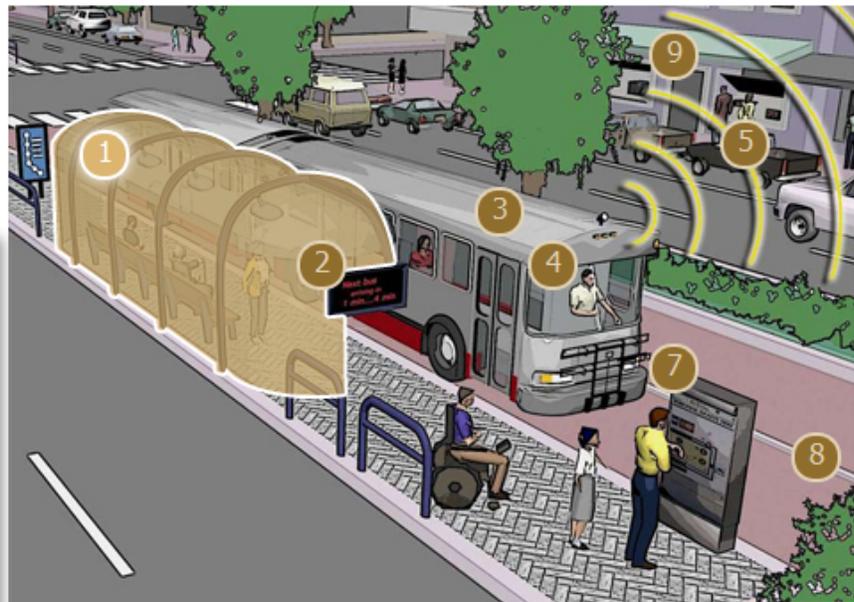


**Architectural & Engineering**

**Bus Station Design**  
 Anil Verma Associates, Inc.  
 Kimley-Horn and Associates, Inc.  
 Otak, Inc.  
 Sasaki Associates, Inc.  
 ZGF Architects LLP

**Special Bus Lane**  
 AECOM Consult, Inc.  
 Atkins North America, Inc.  
 CH2M HILL Companies, Ltd.  
 HNTB Corporation  
 Parson Brinckerhoff  
 SYSTRA Consulting, Inc./SYSTRA Engineering, Inc.  
 Transportation Management & Design, Inc.  
 Vanesse Hangen Brustlin, Inc.

**Engineer & Professional Firms**  
 AECOM Consult, Inc.  
 Atkins North America, Inc.  
 CH2M HILL Companies, Ltd.



Screen shot of mouse-over from interactive website (under construction). Green=public sector; blue=private sector.

## Catalyzing the BRT Industry: Participant Comments

### What would help BRT-related firms identify and act as an industry?

Several groups noted that the public transit industry is already well defined, thus questioning the need to define BRT as a separate industry. Comments on what is generally needed to advance BRT:

- A clearly defined market, with sufficient funding for large-scale BRT projects
- An understanding of the BRT value chain, how firms fit into it, and what drives value across the chain. Case studies on successful projects would be helpful
- An industry association with leadership, a unifying goal, and a focus on advocacy, education and information sharing. Some suggested that APTA or the International Association of Public Transport (UITP) could convene. APTA has a BRT committee that could be reactivated, though it would also need to incorporate business representatives. Others recommended an organization specific to BRT
- More opportunities to connect and network across the value chain. Groups suggested forums, perhaps hosted by APTA, the Transportation Research Board (TRB) or industry groups, to facilitate firms' understanding of the roles played by others across the value chain
- More outreach to decision-makers in local government and MPOs so they better understand the potential of BRT
- Create a new, positive image for bus systems to improve public perception

### What are the challenges to BRT-related firms identifying and acting as an industry?

- Lack of a clear definition of BRT
- Competition between transit modes
- Lack of sufficient market to justify firm specialization; also long project development times. Unlike rail, BRT is not yet a mature industry, lacking critical mass of systems and vehicles
- Lack of stable, long-term public and private funding for transportation in general and BRT in particular
- Lack of sufficient case studies and research on the economic benefits, especially related to land value; rewards and risks remain unclear
- Lack of awareness among the public and politicians about the value of BRT; public stigmas about buses and safety. Need to share information on what advocacy efforts are working
- Lack of an obvious industry leader

## What ideas do you have for catalyzing a BRT industry in the United States?

*Some groups suggested creating a BRT organization within an existing body such as APTA, while others questioned the need for a BRT-specific body. Either way, participants emphasized these roles:*

- Quantify potential gains in every part of the value chain
- Make riding the bus “cool.” A growing number of young people do not want to own cars. Reach them via employers and social media. Provide mobile BRT apps
- Help transit agencies see riders as customers, not as captive users
- Develop a clearer definition of BRT and define criteria for technology selection based on need
- Shorten project completion times
- Secure long-term, stable funding for transit
- Get more young people around the table
- Create a clearinghouse of standards and showcase success stories. The U.S. Green Building Council made green building cool and acceptable by developing performance standards and highlighting health and environmental benefits. BRT can do the same, offering multiple benefits
- Consider the potential role of APTA; participants note that APTA is member-driven, money-driven, and leadership-driven. Is APTA willing to reactivate and reshape the BRT Committee?
- Capitalize on changes in demographics, costs and technology. BRT is increasingly accepted thanks to its low cost and a focus on transit-oriented development and sustainability

## Afternoon Session

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### Lessons Learned from the Wind Power Industry

#### **Presenter: Randy Swisher, American Wind Energy Association (AWEA)**

Randy shared the experience of the U.S. wind power industry, which started as a loose association of hobbyists in a marginalized technology, and eventually transformed into a fast-growing industry with a strikingly effective trade association.

Although wind power clearly is quite different from BRT, the two industries share several key traits. Both are new applications entering an established field of multiple technologies and options. Both are experiencing rollbacks in prior legislative gains. Both have economic benefits that involve land values.

Between 1989 and 2009, AWEA grew from an association of 200 members and annual budget of \$775,000 to 2,400 members and a budget of \$30 million. The number of trade show exhibitors grew from eight to 1,276. AWEA facilitated the industry’s growth via several roles,



including legislative advocacy, liaisons with government, strategic communications, the annual conference and trade show, industry education, and development and promotion of technical standards.

Randy highlighted several key lessons:

- Be vigilant and out front on important policy issues. Build partnerships with relevant federal agencies. Be involved in the political process without being partisan
- Systematically build public support for the stable, long-term policy that is needed for success
- Remember that environmental benefits matter to voters and policymakers, and environmental partners are valuable. However, in tough decisions, economics always trump the environment

## Discussion

*The group was quick to note differences between BRT and wind. Some noted that wind power has a clearer definition than BRT. In addition, transit is more diverse and has more players than wind power. Despite these differences, participants highlighted several elements in common for advancing BRT:*

- Effective leadership. The wind industry has been strategic, persistent, and opportunistic. It also capitalized on the external shock of rising energy prices. Focused leadership helped AWEA confront increased competition from other renewable industries such as solar
- A non-partisan stance. This helps provide long-term consistency in developing policy. AWEA formed a political action committee as part of its public policy focus
- A strong business case that includes economic and other co-benefits. For wind, environmental benefits were an important emotional hook. It is important to promote co-benefits and ally with environmental groups and other partners
- A strong visual image. Positive imagery helps educate and motivate the public and decision-makers. AWEA made the wind turbine an icon of renewable energy

## The Potential of Innovative Financing Mechanisms

### Presenter: Rob Puentes, Brookings Institution

Rob shared several innovative financing mechanisms, an increasingly vital focus in the current funding environment. Traditional direct system funding has included fares, advertising, and parking. Innovations include air rights, naming rights, and concessions. Taxes and government grants typically fill the gap between direct system revenues and actual costs. Innovations include value capture and asset monetization. In the past, systems have been financed through more traditional debt. Newer financing mechanisms include state infrastructure banks, TIFIA and other federal programs, and public private partnerships.



Rob noted several points in the development cycle for value capture, citing examples in Latin America. Suitable ways to capture value depend on whether development and infrastructure are new or existing:

- New development & new infrastructure: impact fees, joint development
- Existing development & new infrastructure: special assessment districts, tax increment financing
- New development & existing infrastructure: air rights
- Existing development & existing infrastructure: Land-value taxes, utility fees

Sources	Traditional	Innovative
<b>Direct system</b>	Farebox, advertising, parking	Air rights, naming rights, concessions
<b>Indirect funding</b>	Local/state taxes, state GO, federal grants	Value capture, asset monetization, other
<b>Financing mechanisms</b>	Debt	State infrastructure banks, federal programs (TIFIA), PPP mechanisms

Most value capture mechanisms require a great deal of coordination among local, state, regional, and federal authorities, and between the public and private sectors. Among the many factors to consider are potential revenue yield, enabling environment, what stakeholders are willing to support, institutional capacity, and unintended consequences.

## Discussion

*The group generated a list of finance and investment actors that could be added to the BRT value chain:*

- Institutional investors, e.g., Citi, JP Morgan, UBS, sovereign wealth funds (which are investing in infrastructure projects across the globe). A roadshow of successful BRT projects would help investors better understand the potential value and risks of investing
- Real estate developers and investors, who can be champions and demonstrate the return on investment. They are a source of showcase projects that serve as case studies for others
- Large institutions such as universities, research parks, hospitals. They have buying power. Paint a better picture of what is in it for them. Share the implications of not acting
- Major employers who are already subsidizing transit because it is cheaper than building more parking. What else will bring them to the table?
- Water and energy utility companies
- Environment, health groups - demonstrate the value of the co-benefits of public transit, BRT

*Participants emphasized the importance of transit-oriented development (TOD), and the need to:*

- Actively link TOD to innovative financing mechanisms
- Document the business case for TOD
- Update local parking ordinances to facilitate TOD. In many communities, TOD violates rules
- Create a repository of model language and showcase projects to help elected officials, the public, and investors understand and implement TOD

## Advancing BRT and a Business Constituency: Participant Comments

### What roles do you see for a business constituency to advance the BRT industry?

- Help define BRT
- Advocate for BRT and needed public policies (e.g., complete streets and TOD model policies)
- Educate local elected officials and MPOs about the potential of BRT
- Push for new financing mechanisms, private and public, for all public transit
- Document economic data, including direct, indirect and induced impacts, e.g. job creation and job access
- Find a champion with experience in BRT, someone who can share success stories. A credible person with connections to the highway side who understands the future and values all modes
- Create a BRT roadshow for investors and local communities who want to learn more
- Identify ways that BRT can grow the total funding pot for transit
- Develop the business case, including return on investment
- Help communities frame their choices
- Convene and continue the conversation

### What are the key challenges to BRT firms self-identifying and acting as an industry?

*One table questioned whether there is a need to self-identify as an industry.*

*Challenges:*

- Need for vision, leadership, coordination
- Lack of a clear definition of BRT that recognizes the diverse transit needs of communities
- Scarcity of funding for transit (fosters extra competition among industry players)
- Low market demand
- Unions representing the operators and drivers on current corridors can pose a barrier

### What policies at the federal or state level would the business constituency support?

- Eliminate mode bias in legislation
- Pass enabling legislation for implementing public private partnerships
- Create new institutions such as infrastructure banks
- Create tax incentives
- Provide funding for infrastructure and operating assistance

- Make changes in allowed axle weights
- Encourage complete streets
- Set parking caps and land use policy that incentivizes density
- Modify public procurement procedures to shorten project development cycles

### **Who would be a potential leader of a BRT business constituency?**

*Several participants mentioned APTA. Others expressed concern, since APTA is member-driven and BRT may get lost among transit modes. Still, high-speed rail once tried to establish a separate trade association but only lost time struggling to do so, and ended up with APTA after all. It was noted that if APTA's members feel BRT is important, APTA will listen. Also, the new executive director is from the bus industry. Champions from the business and the practitioner sides are essential. APTA can play a key role in coordinating all public transit voices and preventing unnecessary competition among modes.*

*Other potential conveners:*

- National Bus Rapid Transit Institute (NBRTI)
- National Association of Counties (NACo)
- Association of Metropolitan Planning Organizations (AMPO)
- National Governors Association (NGA)
- A new BRT group led by business, practitioner, and academic leaders

*Potential partners:*

- Local and national philanthropic institutions
- Chambers of Commerce or other business community champions
- Advocacy organizations – local and national
- Communities with BRT experience

### **What could be a first step toward catalyzing a business constituency for BRT?**

*Each table identified a different first step:*

- Define BRT
- Create a long-term vision
- Identify a champion
- Develop a political strategy
- Create common message points
- Showcase successful projects with a roadshow to attract private investors
- Reconstitute the APTA BRT committee with the addition of private sector interests

## What data from researchers would be most helpful?

- Economic data on cost effectiveness, including operations and maintenance
- Performance measures
- Competitiveness of BRT, e.g. cost, environmental benefits, job creation & access, development
- Project completion times
- Best practices and case studies
- The implications of socio-economic factors on projects
- Documentation of the many benefits including economic, environmental, health and safety, land development, and market opportunity

## In Closing: Sample Individual Actions

Participants finished the meeting by reflecting on what they had learned and identifying future actions they are willing to take to advance BRT:

- Network with others in the BRT industry, arrange follow-up meetings
- Advocate to improve the language defining BRT in the transportation reauthorization bill
- Advocate to redefine federal and state axle weight restrictions to allow for more use of BRT
- Advocate for more federal, state and local funding
- Help create the business case for BRT
- Advocate to reconstruct and strengthen the BRT committee of APTA
- Form a political action committee to support public transit
- Work with traffic engineers and roadway jurisdictions to implement transit priority for BRT
- Revisit opportunities for public-private partnerships
- Look at opportunities to partner with environmental organizations
- Collaborate with other business constituencies to understand the impact and benefits of BRT
- Improve the quantity and quality of data within the new databases
- Continue to share and promote BRT stories from across the globe
- Build a successful BRT system
- Offer tours of BRT manufacturing plants for policy makers, boards of directors, etc.; make cool new BRT vehicles available as demonstrators so communities get a hands-on, 3-D understanding
- Educate and inform metro leaders about new ways to strengthen communities via modern transit investments like BRT. Get projects done!

# Meeting Participants

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