FINAL REPORT
APTA INNOVATIVE FUNDING AND FINANCING STUDY MISSION
LONDON, STOCKHOLM AND MUNICH
APRIL 19-24, 2015

Introduction

On April 19-24, 15 APTA members embarked on a week-long study mission on innovative funding and financing solutions for transit. The group, representing transit agencies, business members, and academia, travelled to London, Stockholm and Munich. They met with city and regional representatives, transit professionals, local politicians and real estate developers. The aim: explore successful funding and financing mechanisms for transit and their potential transferability to the North American context. A key focus was to identify the cultural, political and structural factors that would impact how applicable such approaches would be for North American transit agencies.

The following report describes who the study mission participants met with in each city, the tools and projects they were presented and the context in which they were implemented. It outlines the challenges and lessons learned as well as key conclusions on what is transferable to the North American transportation environment.

LONDON
APRIL 20-21, 2015

1. Who We Met

Over the two days in London, the study group met with representatives of Transport for London (TfL) and persons involved in implementation of Crossrail, as well as with private sector representatives involved in the implementation of the Battersea Power Station, a major development project occurring in conjunction with TfL's Northern Line Extension. The meetings held on each day were:

Day 1: Transport for London and Crossrail

- **Julian Ware**, Senior Principal Commercial Finance
- **Simon Bennett**, Programme Community Relations Manager, Crossrail
- **Trevor Sandford**, Senior Associate Commercial Finance – Crossrail funding
- **Ben Plowden**, Director of Surface Strategy and Planning
- **Emanuela Cernoia-Russo**, Senior Treasury Manager - TFL borrowing since 2009, most recently, through issuance of a Green Bond
- **Mike Binnington**, Senior Principal Commercial Finance – Rolling Stock Financing; Pensions
- **Richard Newley**, Risk Advisory – cost estimating – AECOM

Day 2: Northern Line Extension (NLE), Battersea Power Station Development, and Nine Elms

- **Simon Cawte**, Senior Communications Manager, Battersea Power Station
- **Helen Fisher**, Nine Elms, Programme Director – community involvement in the Nine Elms area
- **Will Muse**, Senior Associate – Commercial Finance, TfL
- **Tom Burton-Page**, Head of Funding and Case-Crossrail 2

2. Key Agencies and Projects

The key agencies and projects that were the focus of discussions were TfL, the Crossrail project, TfL's Northern Line Extension, and the Battersea Power Station Development project, each of which is described briefly below.

Transport for London (TfL): TfL is responsible for most modes of transport in London – bus, underground rail, some surface rail, bicycle, pedestrian, and streets and roads. Traffic and congestion management are also under TfL. Two transport system elements not under TfL are the bulk of the national rail system and airports. Airport development and operation is under the central Government; the Mayor, however, has strong views on airports and is opposed to the expansion of Heathrow.

Crossrail: Crossrail is a £ 14.8 Billion rail project that will extend 118 km (approximately 74 miles) from Paddington Station to Heathrow Airport. Crossrail is being implemented by a separate organization formed by TfL with the Department for Transport. The project initiated construction

in 2009, and will be completed in 2018. Crossrail service will be operated by MTR under a concession. Twenty-four (24) trains will operate per hour – or a train every 2.5 minutes, double the capacity of regular train service; serve 40 stations, of which 10 are new; and provide 200 million trips per day. Property values are projected to increase 18% on average, across zones in London close to Crossrail stations, as a result of the Crossrail project. The projected increase in property values with Crossrail 1 is providing a learning experience for Crossrail 2 in terms of extending existing financing strategies to be able to capture value.

Northern Line Extension: The Northern Line Extension has been tied directly to provision of access to the Vauxhall, Nine Elms, and Battersea (VNEB) regeneration (redevelopment) area. In the absence of the Extension, Battersea Power Station and the VNEB area have poor Public Transit Accessibility levels due to lack of capacity on the existing lines and stations. Existing rail lines and transfers will be reconfigured, and the Northern Line extended to Battersea with two new stations. Financing for the NLE Funding Structure will come from the Greater London Authority, which will be borrowing up to £ 1 Billion from the European Investment Bank. This will be repaid from a mixture of developer contributions and incremental business rates income over 25 years. A UK Guarantee will offer an additional 5 years if necessary.

Similar to TIF, a large uplift is projected on business rates paid on property. "Business rates" is a formal term in the UK which refers to the tax on the occupation of non-domestic property. It is not on the property itself. The Battersea Power Station development will pay through Enterprise Zone income and a Section 106 Community Infrastructure Charge (a developer contribution). The Enterprise Zone will allow for the retention of incremental business rates generated by new commercial development to be used as a funding stream for the extension. One-third of the cost is to come from developer contributions with the remainder from borrowing against future rates of income; the developer contributions, however, are expected to be paid earlier.

3. **Socio-Political Context**

Created in 2000 pursuant to the 1999 Greater London Authority Act, TfL was charged with implementation of a Public Transportation Plan that was developed in consultation with the public. Since its creation, TfL has surpassed the expectations of critics and has been highly successful in improving public transport in the Greater London area, starting with the imposition of a Congestion Charge program whereby vehicles entering central London are charged a variable fee, with net revenues used to fund transport improvements. With its successful track record in upgrading and expanding London's rail and bus network and in implementing active transportation improvements for bicycles and pedestrians, the agency garnered and continues to enjoy strong public support. The current Mayor, Boris Johnson, successor to Mr. Livingston as Chair of TfL, continues the former Chair's strong hands-on commitment to public transit.

The Mayor's (and TfL's) agenda has focused on three key objectives:

- Congestion reduction as well as safety and security improvement
- Tube renewal – including upgrade of track and signaling system, replacement of rolling stock, and system maintenance and state of good repair

- Capacity expansion – with extensions and new lines including Crossrail to accommodate the population and employment growth in the region.

This commitment is shared at the broader government levels as well, with regional and national support for TfL and a belief in its ability to deliver. This also translates into support for regional and national funding mechanisms that provide a portion of the capital funding for major projects such as the Northern Line Extension and Crossrail and well as for transport operations.

Thus, TfL operates in a highly favorable environment. There is national commitment to transport investment and taxation. It enjoys a high level of public and governmental confidence. And there is a strong belief based on demonstrated success that transit investment provides a highly positive return on investment in the form of economic revitalization and development, mobility enhancement, congestion reduction, job creation, and improvement in quality of life.

Consistent with the cross-party support that has characterized public transport in London, special legislation (the Crossrail Act) was passed to provide the powers for the project and support the TfL/DfT entity. Costs are shared, with London paying 66% and the National government paying 33% of capital costs. Key to garnering public and political support for Crossrail has been the focus on anticipated project benefits from strategic investment, in particular: overall benefit to the economy, provision of capacity for the system as a whole, and accommodation of existing and projected growth. The investment expected to generate net benefit of £ 42 Billion; create 14,000 jobs on site and support 55,000 long-term jobs. It will also provide significant environmental benefits, including significant reduction in carbon emissions, 50% reduction in train noise, and 23% improvement in station energy consumption.

Role of the Auto

Other factors that affect TfL and the larger perceptions of public transportation are that London has a long transit history developed before the auto. It is not considered to have a car culture. Auto ownership is comparatively low, with 60% of the population owning an auto. Parking ratios for residential development are low, at 0.55 spaces per unit. Approximately 25% of residents commute by walk mode in central London, with bicycle usage rapidly growing as a major commute mode. After a period of population loss, since 1984 London's population has grown from 6 million to 8.4 million, is rising by around 70-100,000 per year, and is expected to reach 10 million people. This increase in persons and development densities creates pressure on the transit system and the need for system improvements and capacity expansion for the over 30 million trips made per day.

Relationship of the Control over Land Use to Transportation

TfL itself does not have direct control over land use, but such coordination fully occurs, with transport and land use planned together. Both functions are under the Mayor and City (GLA). In the case of the Northern Line Extension, there are also 2 boroughs involved in the planning of the supportive public improvements (schools, parks, other), with the developers responsible for providing the portion of their improvements within their individual project areas.

4. **Funding and Financing Tools Used**

Of key interest to the Study Team was understanding of the sources of public funding for capital and for operations and maintenance. The Team was particularly interested in the shift that has occurred in Great Britain away from public private partnerships (P3) involving private equity and private financing; the use of Congestion Charges in central London; and the growing interest in the creation of funding and financing tools involving value capture from development.

Development of Funding Tools for Transport for London:

To fund its approximately £ 5.8 Billion in annual expenses and £ 900 million in depreciation and amortization, TfL currently relies on receipt of approximately £ 5 billion in national grants and bond proceeds that are committed on a multi-year basis. Of this total, approximately £ 2 Billion is specifically for Crossrail, £ 1.5 Billion for operations, and the balance for other capital projects within TfL's mission. Of TfL's approximately £ 4.8 Billion in operating revenue, 79% is from fares, 7% from national reimbursement of free fares for elderly and disabled, 5% from Congestion charges, and 3% from Advertising revenue. All others combined contribute 6%, with no single source contributing more than 1%. Congestion Charges generate approximately £ 235 Million in gross revenue, of which 37% is used for operating costs (toll facilities, traffic management, administration) with net revenues of 63% used for transport improvements.

While TfL public transport investments create value, the Mayor has had to move toward creation of new funding mechanisms to get around the 1990 nationalization of property taxes. Among the mechanisms that have been developed and utilized are existing schemes to capture value from development:

New Commercial and Residential Development

- Community Infrastructure Levy (CIL) – a fee charged per square meter on new residential and commercial developments across London. The Planning Act of 2008 granted powers to Mayor to raise CIL, which he implemented with 3 different zonal rates based on prices. The CIL levy was specifically created for Crossrail. CIL funds are to be spent on strategic transport.

- Business Rate Supplement (BRS) - a supplement on existing business tax rates, essentially a tax on the occupation of non-domestic property that allows local authorities to charge a supplement on medium and larger scale businesses. It was developed to assist in funding Crossrail.

- Over Site Development (OSD) - 12 major Crossrail sites identified for disposal with an aim of raising £ 500 million in net receipts. Land has been sold with development approvals in place. One example is 500,000 sq. ft. of premium retail, office, and residential created at eastern end of Oxford and Tottenham Road.

- Section 106 Contribution (S106) - Adopted in June 2010 as a charge on new commercial development in special area, including the Central Activity Zone (CAZ) and within a 1 km radius of Crossrail stations – another form of developer contribution.

- Enterprise Zone – This is being used at Battersea Power Station to capture value created by the two new Northern Line Extension rail stations for new commercial development. The increase in allowable commercial development density at Battersea is specifically tied to the tube line extension.

Existing Development

- Commercial Development – BRS can be used to capture value from existing commercial development.

- Residential Development – increase in existing residential values is not captured under current mechanisms. New mechanisms are under consideration to capture increases in existing residential property values for Crossrail 2, but this is a difficult area.

5. Challenges/Lessons Learned

The meetings held and materials reviewed over the course of the two days in London highlighted a number of lessons and associated challenges.

Key Success Factors

- Leadership/governance
  - Clear political mandate and accountability/"line of sight"
  - Mayor has the power
  - Overwhelming support by Mayor/direct control by Mayor
  - Public/business support for taxation
- Outcomes and travel trends
  - Shared – Olympics and normal times
  - Customer focused
  - Transport as a means to a set of wider social/economic ends
  - Strong belief in ROI of transit investment
  - So well connected that walking/cycling are a large and growing part of commute trips
  - Low parking ratio per resident
  - 60% - Auto ownership
  - Facing high increase in population
  - Bus system based on principles of frequency and reliability
- Integration
  - Institutional/organizational planning and investment linked to Operations (network, ticketing, branding, information)
  - Jurisdictional mandate for Transport for London – ability to look at all modes, roads, congestion management
  - While transport has no direct control over land use, there is a strategic planning process in place that enables transit to play an integral part of urban planning

- Have been able to make the case for an overall benefit to the economy
- Give and take of Transport for London's relationship with development community

- Funding
  - Diverse range of funding sources, with large share of O&M costs coming through the farebox
  - Independent – have broad and predictable fare income
  - Value capture from transit oriented development
  - Have stepped away from traditional PFI, P3s

6. **Transferability**

The Study Group members considered the following factors as important to the potential for transferability of the London experience to agencies in the United States:

- Political and public commitment essential
- Overcoming of parochial perspective in terms of achieving greater benefit
- Demonstrates essentiality of multi-year funding commitments for both project implementation and planning
- Importance of demonstrating the economic, social, and environmental benefits of the projects
- Need to form multi- coalitions to advance
- Need to obtain multiple sources of funding – need to look at assembling a variety of sources
- Relationship between TfL, GLA, and the developer community – very strong collaboration and recognition of the win-win on both sides
- Mutual benefit – recognition that both sides need each other
- PFI was policy-driven
- Density of London
- Taxing schemes – are there similarities/differences.
  - Commercial properties
  - TIF – need a "but for" test; also need to show that you are not taking tax revenue from another location. Demonstrate creation of value
  - Importance of getting revenue up-front, instead of building on the basis of cash flow
  - Use of funding mechanisms that could be dedicated
  - Multiple funding mechanisms – not just reliance on farebox
  - Decisions not as bogged down with various approval processes, including public plebiscite. Elected officials make decisions. Makes it easier to do smaller and medium size projects
  - Don't have to go through the expense and time required to develop support for funding measures in the US
  - Have a committed level of debt that has to be issued annually
- Non-partisan support for public transportation. In US, is becoming a partisan issue.
- Frequency and reliability of the bus service – through dedicating bus lanes. High frequency service.

- Buses are contracted out to private sector for operation, following standards set by the Government. Private contractors own the vehicles and provide the maintenance faciltiies.
- Not much money spent on highways and roads in the urban areas – creating disincentive to auto use.
- Congestion Zone – importance of having multiple transit options within the zone.
- Olympics as a catalyst
- Cohesion of governance/mayoral control a positive in London case
- Need to focus on ROI of individual projects, not just programs
- Benefit of long-term, dedicated funding source
- Need to form cross-disciplinary coalitions for any project and baskets of funding
- We need to create the conditions for a flow of tax/user fees income dedicated to transit
- We may have too much public oversight – it is hard to do small projects because elections are expensive
- Accelerated project execution – how do we create the conditions for that?
- Need to de-politicize transportation investment and make it non-partisan. We need to create a win-win relationship between London business and public transport
- London had to be shown to be paying for at least part of the improvements
- Business property Tax – with a threshold so that the smaller businesses are not hurt
- Developers and land owners pay

STOCKHOLM
APRIL 22, 2015

1. Who We Met

Gunnar Soderholm, Head of Environmental and Health Administration, City of Stockholm
Carl Cederschiold, former Mayor of Stockholm and currently consultant for the City
Jonas Eliasson, Professor Royal Institute of Technology, Center for Transport Studies, Stockholm
Birger Hook, Senior Advisor
Public Transport Company - **Anders Windstrom**, **Bjorn Holmberg**, **Hakan Nilsson** (CFO), **Stefan Wlin**
Where we met - **Stockholm City Hall** - where Nobel prizes are awarded

2. Socio-political and Geographic Context

Greater Stockholm is an area of 2.1 million people, about 900,000 of whom live in the city. The city itself is 14 islands connected by bridges. There is an inadequate supply of housing in the city with plans for 140,000 new apartments to be constructed in the next 15 years. There are more jobs than housing in the city and also job centers to the north. This makes for an influx of working commuters into the city, but also commuters exiting over a limited number of roads and bridges each day. Commuters make up roughly 25% of all trips. Since the 1970s there has been a discussion regarding congestion control, which is estimated to cost between a half billion to a billion dollars per year in lost time and productivity.

Stockholm was in 2010 designated the first "Green" capital of Europe, a designation of which it is fiercely proud. Its streets are spotless and people fish in its busy waterways. Congestion was perceived as a damage to the environment as well as the individual. After a 2002 elections a coalition of parties agreed to bring congestion pricing forward but not until 2006. The articulated goals were to improve the environment and provide better accessibility. Revenue generation was not put forward as a primary goal.

3. Role of the Auto

Congestion pricing has significantly altered the number of autos used for commuting. Between 2003 and 2014 the number of cars in and out of the city between the hours of 6 am and 9 pm went from over 500,000 to 375,000. Eighty percent of those working in Stockholm take transit. The transit system was excellent before congestion pricing and implementation took place without significant additional investment in mass transit as a pre-cursor, although some of the revenues generated by the program are being used for additional transit investment. More people in Stockholm commute by bike than car except in the winter months. Traffic at peak has been reduced 10 - 26% depending upon entry point into the City. The goal of the program was to reduce auto traffic and it has achieved that goal.

4. Finance Tool

Congestion pricing was not implemented as a finance tool. Congestion pricing was implemented in 2006 on a trial basis, and continued after public referendum, was presented as a means of improving the environmental and quality of life. It is a tax. Although the vote was only within the City, as there are a number of reverse commuters many voters did agree to tax themselves. Revenue from the program is supporting additional transit investment including metro line expansion. Peak period charges are about $2.30 each way per car with a maximum of about $7 per day. There are no exceptions for who is charged, but businesses may deduct the cost from income taxes.

5. Source of Revenue for the Transit System

The local transit system's operating costs are financed up to 45% by fare revenues, and the balance of operating costs comes from Regional council funding, sources of which are income and sales tax. Capital funding is from the federal and city government. Both a national and European infrastructure bank make low or no interest cost loans to the transit agency for capital expansion and rail vehicle procurement.

6. Public/Private Role

Operations are privatized and contracts run 6-12 years for bus and rail services. Combined the value of contracts awarded by the city for transportation service have exceed $8 billion US dollars in 10 years. Of 15,000 working in the transit industry in Stockholm, only 750 are city staff. Bus operators acquire their own vehicles, but there are no structural tax or lending differences between public and private borrowing so no reason to shift the risk from private to public sector based on cost of funds. The city owns rail lines and vehicles and considers these to be key strategic assets. EU requirements also prohibit local preference and contracts must be available on equal terms to all EU proposers. Operators have farebox revenue risk and are responsible for collections, and the quality of their service. They do not control fares or overall design of service, but can suggest efficiencies in terms of routing and frequency. Prior to transferring farebox risk to operators there had been a 34% increase in costs over 10 year period without an increase in revenue. Cost increases and revenue increases have been within 1% of each other in recent years, with fare collections up 22% and customer satisfaction between 78-88%. Contractors are for operation and maintenance of the system and other than procuring buses, contractors do not finance capital infrastructure.

7. Challenges/Lessons Learned

The major challenges to congestion pricing were political and legal. Prior to implementation, which is essentially performed by photographing each car that goes through a checkpoint at certain time of day and billing the vehicle owner, newspapers and some politicians as well as some members of the public promised a parade of horribles. There would be cheating. The technology would not work. It would strangle commerce. It would drive people from the city. The demonstration program in 2006 worked well enough that at a public referendum a year or so after implementation, it was retained and has continued with greater billing efficiency implemented over time. Public opinion went from 70% unfavorable before implementation to 70% favorable

in recent polls. The procurement process for system implementation was held up in court but ultimately validated. IBM was the system vendor. Political leaders were afraid to move forward with the program. Geography, housing and job patterns had left no good alternative which was ultimately why local government officials were ultimately persuaded to proceed with a trial period and the program has worked. Lessons learned from other communities in Sweden, however, demonstrate it is not a program that works everywhere. Communities where all major points of access could not be controlled and use of revenues was not strictly in keeping with how the program was promoted have not fared as well. Ensuring sufficient transit availability has also been critical, and capital costs for new lines in a place where deep tunneling is involved for rail service is a challenge as well. More bike share programs and lanes have also been required to make alternatives to cars available.

8. **Prerequisites/Transferability**

A major prerequisite to congestion pricing is the availability of viable alternatives to the auto. In Stockholm there was good mass transit with capacity. The program did not make Stockholm a place where people could not afford to go to work. Geography also made implementing control points in a city of bridges feasible. Many US cities lack sufficient mass transit or sufficient physical locations to control access in a way that would make congestion pricing meaningful. Some US cities have put tolls on major bridges and tunnels but that is largely an east coast, large city phenomenon. There were also significant disincentives to driving in Stockholm as, along with the significant congestion and very limited physical opportunity for road and bridge expansion, without taking land in developed areas parking is not readily available. Changes in parking policies and sufficiently dense development for mass transit and job concentration would be needed for success in many US cities.

9. **Land Use**

Over 90% of Sweden's population is in the bottom third of the country. Housing is in short supply in part due to liberal immigration policies and high quality of life. Additional housing is planned along with increased rail lines. There is a limit to how much the population, or the number of vehicles, can grow. Apartments are the primary mode of housing right in the city, and parking availability is very limited.

10. **Outcomes/Next Steps**

As noted above, the outcome in Stockholm has been positive. Results in areas with less geographic limitations to access, less clear and transparent policy goals for revenues, and less physical limitation of growth have been less successful. In Stockholm a 2016 charge increase is anticipated with no expectation of ending the program.

MUNICH
APRIL 23-24, 2015

1. Who We Met

Gunnar Heipp, MVG Director Strategic Planning Projects, International Affairs

Hilia Boris Iglesia, Transport Economics, International Association for Public Transport (UITP)

Dr. Kurt Bechtold, Deputy Director, Transport Department, The Bavarian Ministry of the Interior, of Construction and Transport

Eduard Rollmann, Transport Association Management, Department Law and Holdings, MVG

2. Organization and Funding of Public Transportation in Munich

MVG or Munich Verkehrsgesellschaft (Public Transport Company) is a subsidiary of SWM or Stadtwerke Munich (Munich City Utilities) which is a public utility company for Munich, wholly owned by the City. SWM also includes energy services, gas, water, city swimming pools, telecommunications and management of the Munich Olympic Park. As stated on the SWM website, "Our customers – whether private customers, medium-sized companies or global players - receive all necessary infrastructure services from one reliable partner which offers total dependability and competitive prices." (http://www.swm.de/english/company/about.html). In the past subsidiary companies had large debt burdens and lacked sufficient infrastructure. This is no longer the case. While SWM has numerous services, it is a well-integrated company that provides back office support (such as HR, finance, etc.) for all of its activities.

MVG funds 100% of its operations out of its revenue generation activities, but that does not include the administrative support provided by SWM. The SWM/MVG structure is common elsewhere in Germany. In the past this type of structure has been used to cross subsidize operating deficits in public transport. The SWM would pay taxes on its overall profits. Losses from transit would offset profits from electricity for example, bringing down overall taxable income.[1] However, no other German transport company achieves 100% cost coverage as achieved by MVG. One factor in Munich's favor is that the city subway (U-Bahn) and regional rail system (S-Bahn) were initially built in the 1960s and therefore are relatively new compared to other German systems. Maintenance cost are thus less. Also Munich to build a corridor (Stammstrecke or Main Artery) in the central district where all of the modes of transport come together increasing efficient transfers. However it also has capacity constraints.[2] The midpoint of this corridor is represented by the Munich Central Station supplemented by a number of other transfer stations east and west along the corridor.

Per the MVG website, the company "…is Germany's second largest municipal transport company.

[1] Interview of Dr. Ralph Buehler, Associate Professor, Urban Affairs and Planning, Virginia Tech. Dr. Buehler studies include comparative research between German and North American public transportation. His insights helped to better place Munich in the overall German public transportation context.
[2] Idem

It operates underground, bus and tram networks for Munich. …The MVG public transport network is easily accessible wherever you are in Munich." The company reports that every household is within 400 meters of an underground station, a tram station or a bus stop. This is the highest service coverage for all transit systems in Germany and helps to generate 450 million annual customers.

The Munich public transport system is a very comprehensive 24 hour a day operation. MVG has a combination of bus, tram, and rail underground (U-Bahn) networks. MVG service area population is 1.5 million and it has 3500 employees. The city is densifying as the population is growing with an expected increase of 22% by 2030. The road network and underground are at capacity. Housing prices are high. There is a steady growth in transport ridership. MVG has a balanced approach to their capital investments including building new, such as a recent new streetcar line (from Steinhausen to Baunk), and refurbishment of existing infrastructure (such as U-Station Marienplatz). The latter is done while in operations because the bus system cannot absorb the diversion of passengers. There is an extensive number of lifts (elevators) and escalators, the largest in Germany, to maintain, particularly in the Stammstrecke corridor to serve all the various rail lines that converge there. The Central Station is in need of refurbishment, which has been deferred due to a lack of funding.

Operating model

Under the European Union, municipalities have the choice of owning and operating their public services or contracting out (tendering) them to the private sector. Munich has chosen the former approach. Still there has been EU "pressure" for services like MVG to become more efficient by tendering the service for private operation. To that end the MVG started to restructure its business 15 years ago with the focus on reducing costs. This was done proactively to avoid possible future economic difficulties. As such it is has achieved the singular German status of operating solely on the revenue that it generates.[3] MVG has combined a number of efficiency strategies including better market testing, restructuring of its operations to reflect it as a business center, becoming more customer focused, reducing wages of operators and directing staff to focus on sales. The company has a "culture of voluntary sacrifice". It also regularly benchmarks itself with private sector practices to ensure it remains competitive and to avoid pressures to tender.

MVG is different from the London and Stockholm operating models where much of the service is contracted out. MVG directly operates 100% of the underground and tram services, city bus service, and a good portion of the suburban bus service. Though there are 13 smaller private contract bus companies in the suburbs that feed into MVG services. They provide their own buses and are paid on a kilometer basis.

Public, Political and Business Support

There is a concern that the federal government is not providing local public transport services more financial support. It was noted that the German Treasurer is very focused on maintaining a

[3] MVG assets that it does follow generally accepted private sector accounting principles in calculating the cost coverage rate.

balanced budget.[4] Fortunately for Munich, the unemployment rate is low which allows the city government and Bavaria to spend more on services. However the German tax structure is such that many federal taxes, such as the value added tax, create revenues at the national level but only trickles back down to with municipalities which are on the low receiving end. While the tax scheme is complicated, municipalities seem to rely greatly on business taxes. Property taxes are very low in Germany.

In advocating for public transport support, MVG acknowledges the importance of the business community, like BMW and Siemens which are headquartered in Munich, as well as real estate developers.

The consensus on the importance of public transport to the success of Munich and the region came together over many years. This created a political willingness to provide a large amount of municipal revenue for the services. Thus support for public transport is like London and Stockholm. While affordable housing has a higher priority, there is a close alignment of housing and public transport policies.

Fare collection

To provide fare uniformity, the Munich Transportation and Tariff Association (MVV), collects fares from all public transport companies in the region. The companies are subsequently compensated for their "real" revenues collected on their vehicles. For example, MVV collects 50m Euro annually in fare revenue from regional bus companies. MVV conducts a passenger survey every 3 years which includes an origination and destination analysis which is used to allocate fare revenue back to the companies. For rail, the fare revenues are split 60% to MVG for underground rail and 40% to DB for regional rail, which is determined by the survey passenger counts. The process is fairly simple. The challenge is getting the correct data. Data is also used to target capacity increase investments and service levels to meet demand and that is "paying off" in continuous ridership increases.

MVG fare revenues are approximately 600m Euro annually. MVG has had regular fare increases but not as much as the national combined increase over the last decade. The increase is about 2.5% per year but monthly and annual ticket fares are deeply discounted. There are also significant discounts for certain transit dependent users such as the mobility-impaired and students. MVG is reimbursed by the government for these discounts. Starting in the 1990s, as public transport fares rose dramatically across Germany, there have also been similar increases in the cost of driving particularly through parking fees and high motor vehicle taxes. This has helped to maintain and grow transit ridership. (Note that gas taxes in Germany, which comprise 56% of the retail price, are not earmarked for transportation.)[5]

[4] Buehler interview: A couple of years back a law was passed called 'federalism reform law'. The idea was to give states a larger role vs the federal government. As a results the federal government now gives part of the gas tax to states for their state regional rail service (S-Bahn). Each state has dealt with this differently. However, all seem to agree that the money from the federal level may not be enough. In addition a federal infrastructure finance fund for municipalities is set to expire in 2019 with money starting to run out possibly in 2015. The fund can be used for transit investments.

[5] Buehler interview

Future Outlook

There is a lack of public support for tolling to regulate highway use. There is a German truck freight VMT (vehicle miles traveled) payment for national roads. One is being considered for cars, but not surprisingly is opposed by drivers. MVG expects that it will eventually be imposed.

There has been an "explosion" of mobility apps including those that involve car sharing and trip sharing. MVG is trying to be the central coordinating player and has or is developing a multi-modal app for car sharing, other mobility companies and the public transport system. They are concerned about losing market share to the shared mobility companies. This reflects the strong efforts by German public transport systems to compete for market share against auto travel. DB owns a bike-sharing system, for example.

Unlike in past years, MVG currently does not have sufficient revenue streams to meet its capital needs. The city and SWM are jointly investing in a renewal energy program which has generated 9M Euro for its program so far. They now await more revenue from maturing renewable energy investments to assist in upgrading MVG capital infrastructure.

3. **Organization and Funding of Public Transport in Bavaria**

The State of Bavaria is the largest German state in population, with the highest employment rate and economic growth. This improves the ability of the state and local municipalities to fund transport services. German states have the primary responsibility of funding regional rail and local rapid transit rail operations. The S Bahn regional rail service, a responsibility of the State, recovers two thirds of its cost from fares while the German average for such services is only one third. Interstate rail service operations are the responsibility of the federal government to fund.

All of the federal and state rail services are tendered to private companies to operate, which is a requirement of the European Union. In Bavaria regional rail services are provided 70% by DB Regio and the remaining 30% by other rail transport companies. Operations and infrastructure (track and stations) are contracted separately to different private companies, though Bavaria, similar to Stockholm, prefers to own its own track and stations. Bavaria gives public funding subsidies, primarily federal money, to the private companies of between 920-960 M Euro annually.

While the S-Bahn in Munich, and in Nurnberg, is Bavaria's responsibility, the urban bus, trams, and underground are the responsibility of counties or self-administered towns. As in the case of the Munich, local services can either tender to private companies or retain retained by local government through a municipal owned company such as the MVG.

In Munich the tendering of regional services is typically for 10-11 years with very detailed concession agreements, providing such items as the size and quality of the vehicles, time tables, mileage, etc. Payment to the private operators is based on kilometers. The fare media is a standard DB scheme with a uniform process to properly allocate revenues to each private operating company. Bavaria provides the track and stations. The private operators do not have to bear that capital expense. There are separate operating and infrastructure contracts. DB Netz has the

concession for the construction and maintenance of tracks. DB Station and Service maintains the rail stations. The private operators provide the rolling stock.

Annual Bavaria operating grants to municipal public transport services are 50m Euro, of which 30m Euro goes to private bus operators. The State provides 115m Euro for mobility-impaired and student reduced fares. The municipal or county governments make up the remaining operating deficit if there is one.

For infrastructure projects, Bavaria provides 90% of the funding for improvements such as subways and bus stations. If an infrastructure project is 50m Euro or more, the federal government will contribute.

4. Overview of Public Transportation Funding and Finance Worldwide

UITP, the International Association of Public Transport, has a goal, called Public Transport (PT)x2, of doubling market share of public transport worldwide by 2025. One of the five strategic "axes" to achieve this is securing stable funding and investment. The overall message:

"Ensuring adequate funding for public transport is crucial in a context of growing demand and increasing quality expectations from customers. However, there is rising tension between the costs incurred by these trends and the traditional revenue streams for public transport.

Doubling the market share of public transport worldwide critically relies on the capacity of the sector to combine considerations on funding with the development of a new business model and the integration of public transport with other urban policies.

There is, indeed, no silver bullet for the funding of public transport and successful approaches combine the development of a proper revenue strategy, the earmarking of local charges for public transport, and the establishment of partnerships with private investors."[6]

UITP provides a public transportation toolbox but cautions that each public transportation situation is unique and finance strategies "…must reflect local reality and the range of possible solutions, but the toolbox can help with the selection of the best ingredients."[7]

5. Observations/Lessons learned/Challenges

- Munich's public utility ownership structure for public transport is not found in the U.S. The various utilities included under this structure cover a wide gamut of public services. The "integrated" characterization of these services is very intriguing as to whether that has significantly contributed to MVG's success story, including its 100% cost coverage rate, reliability, and consistent ridership growth despite expressed concerns about lack of sufficient capital funding, particularly from the federal government.

- Unlike in Germany, too often in the U.S. political barriers prevent the regularity in fare

[6] http://growpublictransport.org/tools-and-case-studies/financing-toolbox/
[7] http://growpublictransport.org/tools-and-case-studies/financing-toolbox/

increases which can lead to taking funding from capital funds to prop up operating and operating financial crisis that can lead to efforts to obtain legislative bailouts. German transportation systems benefit from policies that make them more competitive against auto use such as though parking policies and high motor fuel taxes.

- MVG's efforts to be more efficient should reinforces the need for on-going and additional efforts in the U.S.

- Germany is definitely ahead of the U.S. in using a VMT user fee structure.

- In reaction to the development of shared mobility services, MVG aims to act as a central mobility manager. This is leading to first mile/last mile initiatives, which are generating non-transport revenue for the agency.

- Bavaria's commuter rail approach is consistent with the Stockholm approach where they view facilities as strategic capital assets to always be controlled by the public agency.

- A universal or regionally uniform system of fare payment, administered by the Munich Transportation and Tariff Association, encourages ridership. It also helps to integrate the various public transport modes. Metropolitan areas such as the SF Bay Area and Chicago struggle to achieve such integration.

- UITP's PTx2 strategy challenges U.S. transit systems to "fine tune" their business model. This starts with "optimizing" fare policy by maintaining regular but reasonable fare increases and adopting advance fare collection automation to create more flexible fare policies to maximize revenue and capacity. U.S. transit systems need to adopt new commercialization strategies that take advantage of the system's own real estate and extracts value – through municipal taxation - it adds to adjacent properties. It emboldens the U.S. systems to obtain shares of revenue generated by auto use. Transit systems need to partner with the private sector for the delivery of capital improvement projects at a lower financing cost. Finally at the national level, transit systems need to make a better case of the importance of transit to the national economy which should lead to increased national public transit investment.

OVERALL STUDY MISSION CONCLUSIONS: APPLICABILITY TO NORTH AMERICAN CONTEXT

- Capture property value from beyond transit stations.
- Engage developers to contribute to both capital and long-term operating.
- Change travel behavior through congestion pricing in large and small communities.
- Demonstrate new measure first, then seek binding public support.
- Contract out with passenger boardings and customer service incentives.
- Put transit "where people are and not where people scream".
- Manage transit as a business center
  - "Price fares" for cost recovery; subsidize concessions directly to user
  - Generate other operating revenues as a mobility manager.
- Ensure customers see a consolidated service.
- Look to future to build long-term support for transit.
- Embrace transit as an economic revitalizer, job creator, congestion reducer, improver of quality of life – not as a cost.