How to increase revenue for King County Metro operations

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Abstract

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Like other transit agencies in the United States, King County Metro has faced a reduction in State funding and suffered revenue loses as a result of the recent economic recession. Metro faces an operating budget shortfall of approximately $75 million while at the same time experiencing near-record ridership. Recent revenue proposals have recognized this budget shortfall, but not Metro's current unmet service need and expected ridership growth that will further increase demand on bus service.

This study set out to compare the various revenue options available to Metro and determine if there are better options than those currently proposed by the County. While there is an extensive body of literature listing potential revenue options for local governments, less attention has been given to the specific institutional environments faced by individual transit agencies and the realistic ability of them to implement a specific revenue option. Measures based on revenue growth, equity impact, and political feasibility were developed using the available literature to compare these revenue sources.

This comparative analysis found that a statewide graduated income tax would offer the best potential for revenue growth and equity, followed by a countywide, percentage-based, property

tax without the current State limits and restrictions. The next best option in terms of revenue growth potential and equity impacts is the currently proposed countywide motor vehicle emissions tax (MVET), albeit modified to direct more revenue to transit. It's unlikely that the State will pursue an income tax or make substantial changes to property tax law in the near future, but it's possible that an MVET could be approved to go to King County voters in the next year or two.

Metro is not without options while they wait for potential State action. Metro could pursue facility leases, concession agreements, bus advertising/sponsorships, park and ride charges, and the sale of facility air rights. Each of these options alone would not generate sufficient revenue, but implemented in combination, they could potentially fill Metro's budget shortfall and enable service growth. In general, these findings suggest that transit agencies may have additional revenue options that they haven't considered. However, every transit agency will face a different institutional environment that will restrict its available options. It's important for an agency to recognize what steps can be taken in the near term to obtain additional revenue to prevent cuts to transit service and potentially grow service in the future.

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1 Introduction

1.1 Study Context

King County Metro (Metro) bus service is essential for transportation in Seattle and King County, and serving increased ridership with additional service is necessary to sustain and improve quality of life and economic prosperity. The largest hurdle to increasing transit service is the lack of funding. Metro has endured multiple revenue reductions in the last few years and performed multiple cost-cutting measures. In addition, changes to existing tax revenues in 2014 will result in significant service cuts if other revenue options aren't found. This research will determine how other transit systems successfully fund themselves and see if there are lessons that can be applied to Metro to enable it to serve growing transit demand instead of making further service cuts.

1.1.1 Metro's Budget Shortfall

Metro faces a budget shortfall of about $75 million from projected revenues in its 2013-2014 budget. This is mostly the result of the elimination of two sources of revenue: the statewide motor vehicle excise tax (MVET) and the congestion reduction charge. The loss of these revenue sources has forced Metro to rely heavily on sales tax for revenue, which has declined as a result of the global financial recession of 2008-2009.

Metro relied heavily on a statewide MVET for one third of its revenue up to the year 1999 (King County Metro 2014a). In 1999, WA voters approved Initiative 695, which repealed the statewide MVET and instituted the requirement of voter approval for any tax increase by governments in

the State. The State Supreme Court declared initiative 695 unconstitutional (MSRC 2009), but then the State legislature repealed the MVET (King County Metro 2014a). Metro now only receives less than one percent of its revenue from the State (King County Metro 2014a). Loss of the MVET revenue required Metro to get voter approval of sales tax increases from 0.6% to 0.8% in the year 2000 and from 0.8% to 0.9% in 2006. 0.9% is the maximum allowable sales tax rate for public transportation (King County Metro 2014b).

The congestion reduction charge is a temporary fee authorized by the state legislature and approved by the King County Council in 2011 in response to the economic downturn and reduction in sales tax revenue. This $20 fee, collected at the time of annual vehicle registration, was only approved to be collected from June 1, 2012 through May 2014 (King County Metro 2014c). The intent of the congestion reduction charge was to offset revenue shortfalls from sales tax and maintain bus service that would reduce congestion. Although sales tax revenue has slowly increased, it is has not returned to levels that would replace the amount collected by the congestion reduction charge (King County Metro 2014d).

With the loss of the MVET, reliance on sales tax, and end of the congestion reduction charge in May 2014, revenue has fallen far short of costs. "From 2009 through 2015, Metro is expected to collect $1.2 billion less sales tax than was projected before the recession" (King County Metro 2014d).

1.1.2 Revenue Focus

The focus of this research is on the revenue side of Metro's operations finance. Cost, while equally important as revenue, is not being considered because Metro has already taken many

steps to reduce costs, and finding additional cost-cutting measures would be extremely difficult and would not be able to feasibly make up for the lost MVET and congestion charge revenue.

Metro has acknowledged that it must implement cost-cutting measures before attempting to obtain additional revenue. It has already reduced service, eliminated the Ride Free area, and made other changes that have "…saved or gained $798 million from 2009 through 2013 and resulted in ongoing annual revenue and lower expense totaling $148 million." Even with these actions, Metro still faces the $75 million shortfall to maintain current service (King County Metro 2014d).

Metro's cost-cutting actions fall under two main categories: productivity/efficiency measures and one-time measures taken to sustain service until longer-term solutions can be found. Productivity and efficiency actions include changing bus schedules, reducing employee pay growth, eliminating staff positions, eliminating service, and deferral of planned service expansion. Together, Metro's productivity/efficiency actions have saved $204 million and result in $93 million in annual savings. One-time cost-cutting actions include reductions in the capital improvement program and bus replacement reserve fund, using the operating reserve fund to support service, and realization of benefits from the County's employee health program (King County Metro 2014e). There is little room for further cost-cutting measures, so the focus for maintaining and growing bus service must be focused on obtaining additional revenue.

1.2 Proposed Research Design

This research aims to determine which revenue source(s) is the best for Metro to pursue to fill its budget gap and provide for service growth. This study defines "best" by using the factors found

in theoretical literature: amount, growth, equity, and political feasibility. This study will determine if there are lessons that can be learned from previous empirical studies on the outcomes of revenue choices by other transit agencies and from practical literature's large body of prescriptive studies, and see if and how they apply to Metro's situation.

The main research question is: How can King County Metro (and other transit agencies in similar fiscal situations) increase its revenue to not only fund existing bus service, but provide more service as the County's population and ridership increases? This outcome of this research will be a set of recommendations to ensure that Metro has growing revenue. In order to come up with these recommendations, the main research question is broken into three sub-questions:

1. What are the current proposals for meeting Metro's projected operations revenue shortfalls, and how effective would they be at funding increased service?
2. Are there other sources of revenue that Metro could use?
3. What political restrictions prevent Metro from pursuing the best revenue source?

The current revenue proposals are identified in the methodology chapter of this study, and the effectiveness of the proposed revenue sources and other potential revenue options are the subject of this analysis.

1.3 Study Purpose

The findings of this study will contribute to the decision-making of Metro officials, State of WA legislators, and the public. First, the research will determine if the existing proposed funding options for Metro operations will meet current and future needs. Second, the research will determine if there are other revenue options not currently being considered that could better

accommodate growth, be more equitable, and be politically feasible. The research will also find out what changes to WA law may be necessary to implement the best revenue options. The study of potential options will not be limited to what is currently not allowed or politically unpopular.

The findings may justify the current approach of Metro targeting a statewide motor vehicle excise tax or county transportation benefit district. They may also justify different approaches or different timescales of implementation of revenue measures. While there are a number of case examples looking at the experiences of transit agencies with specific revenue sources and examples of practical literature offering a litany of revenue options, there are few studies looking at why an agency makes a revenue choice, the effects of this choice, and the lessons learned. The strength of this study is looking at the reasoning for choosing a revenue source and how to do it, applied to a specific agency.

2 Literature Review

This literature review consists of three parts: 1) a brief summary of the theoretical literature concerning revenue amount and growth, equity issues with infrastructure finance, and political feasibility; 2) an overview of the empirical literature on successful examples of transit revenue generation; and 3) a review of practical literature on revenue options for public transit systems.

2.1 Theory

Choosing revenue sources for transit operations seems as simple as picking the options that produce the highest amount and continue to grow each year at a rate consistent with ridership or system growth. However, there are other requirements beyond revenue amount and growth that must be considered in the real world. Different types of transit revenue sources and government revenue in general, affect people in different ways, raising the issue of equity, or fairness. What the pubic and government decision makers deem fair will influence the ability for a transit agency to adopt certain revenue-generating measures. The implementation of new revenue sources will also depend on the priorities of those in power. Transit agencies are dependent on the government in many cases for the authority to create new revenue sources or raise levels of existing ones. Understanding the theories behind which revenue sources are more equitable and what gets the attention of lawmakers will ultimately influence the ability of transit agencies to generate revenue from new sources.

2.1.1 Revenue Amount and Growth

Because the topic of this thesis concerns providing enough revenue for King County Metro's (Metro) operations, the most important goal for any potential revenue source is the amount money that can be feasibly collected.

To raise enough revenue for operations, it would be simple to pick one type of revenue and divide the amount needed by the number taxable people/thing. However, the "tax base must be broad enough to allow feasible levels" (Bahl, 2004, 91). In Metro's case, the tax base is the wealth in King County that is subject to taxation, whether it's property value, income, sales, or other assets. If the tax doesn't cover enough of taxable things, the tax rate will be too high for people to afford or accept. Therefore, a transit agency like Metro could cast a wide net so the tax base is broad and the tax rate low. However, as Bahl points out, many state governments restrict tax access to the broad bases that local agencies could tap (2004, 91). Even with broad tax bases, sometime local governments are limited in the rates they can assess (Bahl, 2004, 91). Metro is limited by the State of Washington in both the type of taxes it can levy and the amount of tax it can collect from each source. This gets to the heart of Metro's problem: its ability to raise enough revenue to meet its needs is limited by requirements for voter or State government approval.

In addition to the necessity of raising enough revenue for current needs, the literature points to the need for revenue sources to have the ability to grow to meet cost increases from year to year, without requiring regular adjustments of the tax rate (Bahl 2004, 91). This need is especially apparent in the case of Metro, with a growing ridership and King County population (see subchapter 3.3.3). The literature points to property tax as a revenue source that is well suited to

fast-growing areas such as King County (Bahl, 2004). However, historical opposition to property tax increases presents challenges. Bahl recommends a number of steps to increase revenue growth:

1. Regularly reevaluate the property tax base.
2. Levy piggyback sales and income taxes where permitted by the state.
3. Periodically adjust those sales taxes and user charges that are not levied on an ad valorem base (those not based on value, i.e. flat taxes).
4. Limit local tax exemptions.
5. Negotiate in lieu payments from exempt institutions.

However, Bahl acknowledges that while these steps are important, the real power to increasing revenue growth lies with state government. "Successful lobbying of state legislatures for innovative measures such as regional financing, the authority to levy sales and income taxes, better formulated state intergovernmental transfers, and the suspension of property tax rollbacks may be the one action that is most likely to contribute to local government fiscal health" (Bahl 2004, 92). Metro must weigh the benefit of obtaining revenue sources that can grow over time with the cost of waiting for State action.

2.1.2 Equity

While the main criteria of revenue generation for a transit agency is raising enough to cover costs, agencies also must consider equity implications. They need to consider how fairly revenue sources impact people of different incomes, time horizons, and jurisdictions, among other things. Bahl provides an overview of the main equity concerns and challenges of local governments, and Timothy Beatley and William Lucy provide detail on specific equity issues.

The two primary aspects of equity or fairness addressed by governments when choosing tax/fee types are vertical and horizontal equity. Vertical equity refers to how fair a tax is for people of different incomes. A tax is more vertically equitable (i.e., progressive) if those with a higher income bear a greater tax burden than those with a lower income (Bahl 2004, 92). Horizontal equity refers to how things of equal value are treated. A tax is more horizontally equitable if homes or businesses of similar value are taxed the same. Bahl points out that because local governments' tax base is generally not very broad and tax rates are usually not very graduated, it's difficult for them to achieve vertical equity. Local governments have an easier time achieving horizontal equity with proportional property and sales that charge people the same rate across income classes. Bahl makes the case that it is generally easier for state and federal governments to accomplish vertical equity, and it will be important to acknowledge this when comparing potential revenue options for Metro.

Utilitarian Paradigm vs. Difference Principle

The first ethical concept to be considered when evaluating potential revenue sources for Metro is the utilitarian paradigm. This idea focuses on maximizing the ratio of benefits to costs for everyone in a jurisdiction. As a countywide transit body, Metro may be faced with revenue choices that benefit some people at the expense of others, and will have to decide if it's more important to maximize net benefit under the utilitarian paradigm or come up with ways to reduce costs to some individuals at the expense of not achieving the highest net benefit for the County (Beatley 1988, 209-210).

Opposite the utilitarian paradigm is the difference principle conceived by John Rawls. Under this principle, decisions are made that provide the maximum benefit for the least-advantaged economic or social group (Beatley 1988, 211). In the case of transportation, this group is made up of people reliant on transit to get around. They may be low-income, mobility-impaired, or live far from where they work. If a revenue choice results in this group's bus route being reduced or cut, they won't have the option to start driving a car, riding a bike, or walking. They may not be able to move closer to their jobs or spend more time waiting for a bus transfer because they need time to care for family members. If Metro were to evaluate its revenue decisions on this principle, it would need to make serving this group of people its priority.

Both of these paradigms are related to the ideas of need and ability to pay. Considering need in the case of transit requires asking if people who need transit more (e.g., low-income, mobility-impaired) should get more service or pay less than others for the same transit service. Low-income individuals have a greater difficulty to pay for services as transit fares increase. If considering need is important to a transit agency, they should consider revenue sources that don't increase the cost burden on low-income individuals such as income thresholds for certain taxes or low-income fares (Lucy 1988, 231). Linking the idea of need and ability to pay further advance the idea of justice and equity in transportation finance. Requiring low-income people to pay more than high-income people because they need transit more infringes on their ability to meet basic needs. It is much more equitable to ask those who have greater income and property (i.e., they have a greater ability to pay) to contribute more to public investments such as transit (Beatley 1988, 215).

Demand

Considering demand according to Lucy means providing more of a service to those who explicitly request it, and not imposing it on those who don't want it. Identifying demand by looking at usage is one way to do this. In the case of transit, demand can be seen in levels of ridership over time (Lucy 1988, 231-232). Improving service where there is already high ridership would indicate higher equity according to this criterion. It's also important to look at demand in terms of some of the revenue options Metro is proposing that require State approval of King County's ability to tax itself. The State should consider if it is equitable to allow the County to provide more transit service to its residents if they want it while not imposing it on those outside the County, who may not want it.

Intertemporal Equity

Another type of equity considered by transit agencies is intertemporal equity, or looking at who pays when. This really applies to capital projects, as they may be funded well before they are constructed. Revenue generation in this case could be inequitable if later users may benefit from a capital facility without paying for it. This doesn't usually apply on the operations side of transit finance, as operations are funded on an annual basis. However, it is important to note that a current public's willingness to finance operations can have an impact on the future public's transit service (Beatley 1988, 218).

Interjurisdictional Equity

Inter-jurisdictional equity should also be considered by transit agencies. This refers to how fair taxes/fees are across different geographies within their jurisdiction. For most of the potential

revenue sources for Metro operations, this won't be an issue as they will be assessed Countywide. However, one potential option, discussed in detail in subchapter 3.4.3, involves the City of Seattle purchasing in-city routes. Using this revenue option, the Metro must determine how transit service in other jurisdictions would be affected. They would need to consider the difference principle, which in this case means looking at how Seattle going it alone would affect the least-advantaged City or unincorporated area that might not have as much money to pay for its own service. Conversely, Metro would also have to consider the assurance problem. If Seattle invests a lot of money in Metro operations with the assurance that other cities would follow suit, it is unknown if they would bear their share of costs or if Seattle would be burdened with a disproportionate share of costs in the long term (Beatley 1988, 219).

Political Equality

Another important aspect of equity that should be considered is who should make the decisions when it comes to public infrastructure and for whom should they be made? This question concerns political equality, which means the people affected by a decision should be able to participate in the decision-making process. This issue comes up when considering which revenue options require state approval. The constituency of King County may want a certain tax or fee increase, but might not have the same ability to choose and implement it. They are instead dependent on the State's power to set the agenda, which is further discussed in subchapter 2.1.3. Political equality also concerns equality of representation. This is pertinent as well to the State approval required for certain taxing authority. When presented with proposals to change taxes/fees it's important to look at if the state legislature is considering fully and incorporating into their decision making and voting the interests of everyone they represent or special interests.

2.1.3 Government Decision-making

The challenge of implementing a policy change such as a new tax at any government level is easier to understand when one understands the government decision-making or agenda-setting process. Metro has had difficulty getting State approval for the ability to tax itself (see subchapter 3.4.1), and to understand why, it is necessary to determine why some issues before the State government become prominent while others are neglected.

John Kingdon presents a model for understanding policy change that is based on the three major processes of problem recognition, the formation and refining of policy proposals, and politics (1984, 92). Of particular importance to this thesis is problem recognition, as the WA legislature has not considered Metro's budget shortfall enough of a problem to address the issue.

Kingdon explains that for something to rise to the top of a government's agenda, there must be "pervasive, necessary, and powerful indicators" (1984, 98). These indicators should demonstrate the problem that shows the need for the policy, and it helps to use numbers and facts as much as possible (Kingdon 1984, 99). However, Kingdon acknowledges that oftentimes indicators aren't enough to get government to act. The system often only responds to crisis, especially when it comes to transportation issues (Kingdon 1984, 100). The reason that government doesn't necessarily act on problems with transportation until there is a serious issue is because the subject matter is mundane and ordinary. Kingdon noted specifically that when it comes to buses, social class bias against them means government pays them little attention (Kingdon 1984, 101-102).

Government often won't take notice of transportation problems until conditions deteriorate to the point of crisis, and it's necessary for the crisis to be visible and widespread for it to be notice, such as a threat to the economy (Kingdon 1984, 100-101). "Such events demand some sort of action so clearly that even inaction is a decision" (Kingdon 1984, 101). Kingdon adds that crisis alone is sometimes not enough to spur government action, and it needs accompanying personal experiences, repeated crises, or powerful symbols (1984, 102-103). Finally, for an issue to gain prominence, government must receive feedback from the public, so they are aware of problems in the first place (Kingdon 1984, 106). Kingdon also importantly notes that even when a problem is prominent with decision-makers, preoccupation and fatigue can cause discussion to fade and issues to fall to the bottom of the government agenda (Kingdon 1984, 110).

2.2 Empirical Literature

The following section provides an overview of empirical studies covering the revenue options available to transit agencies. The focus of each empirical study is generally a transit agency, city, or region and what can be learned from implementation of a specific revenue generating a tax or fee. Some provide historical background information on why localities need to look for new revenue, when it often wasn't the case in the past. What the empirical literature generally doesn't do is describe why localities chose specific revenue sources, provide results, and determine if a locality would do things differently.

2.2.1 Public Subsidy of Transit

Before understanding the different ways governments choose to fund transit, it is important to understand why government provides funding to transit at all. Munoz and de Grange identify two main economic reasons why public subsidization of transit is done. The first reason they give is

that providing an additional trip of pubic transit has a lower marginal social cost than a car trip. The reason behind this is that cars produce a larger quantity of negative externalities than transit, including congestion, pollution, and accidents. By subsidizing public transportation, government can get more people to switch from driving to riding transit, and this would improve resource allocation efficiency (Munoz and de Grange 2010, 383).

The second reason given for why government subsidizes transit is to achieve economies of scale. Providing funding to transit to improve it will increase ridership, which will then justify and demand greater trip frequency and additional routes, which will then improve service for all riders. “In other words, the additional users produce a positive external effect on existing ones” (Munoz 2010, 383-384). The reasoning for why governments might subsidize transit does not explain why funding levels at different levels of government have changed. The next section points to the increased dependence on local government funding.

2.2.2 Rise of Local Transit Funding

Up until the 1960s, few local governments relied on local taxes to fund transportation (with the except of property taxes). Governments were restricted by narrow tax policy frameworks of their respective states. In the late 1960s, transit systems in major cities were struggling financially in this limited framework, so some states allowed cities to pursue new local funding sources. Seattle was one of the first to adopt a dedicated non-property transit tax with a sales tax in 1973 (Goldman 2003, 27).

Further propagating the use local transportation taxes were the “tax revolts” in the 1970s around the country that created property tax limits or required public votes for local tax increases. In the

1970s as the state and national highway systems were built out, more of their funding was being dedicated to road maintenance, further pushing localities toward local taxes. In the 1990s, the use of sales tax for transit funding really started to spread. In contracts, few states allowed motor fuel taxes to be used by local jurisdictions in the 1990s, which are still prohibited for local use in Washington State. Further driving use of local taxes in 1990s was competition between each other to capture economic development, and one way they tried to do this was by developing good transit facilities (Goldman 2003, 28).

Overall, a significant shift has occurred since the 1960s toward a reliance on sales taxes and a decline in federal and state funding (Goldman 2003, 28). This is strikingly evident in the case of Metro. In 2011, the average state contribution to transit operating funding was 24.3% (APTA, 2013). This compares to Metro receiving less than 1% of its funding from the state after the elimination of the MVET, which previously provided 1/3 of Metro's revenue (King County Metro 2014a).

2.2.3 Fare Structure

Two strategies are discussed in the empirical literature regarding maximizing revenue using fare structures that aren't flat. The first strategy is to charge different rates depending on the time of time. By charging people more when there is greater demand (i.e. morning and evening peak periods), transit agencies can gain additional revenue from those who continue to ride during peak periods. It also shifts some riders to non-peak periods, which reduces the demand and need for more buses and drivers during peak periods, saving money (Munoz and de Grange 2010, 384; Cervero 1982, 321).

The other fare structure option to increase revenue is to charge more for longer-distance trips, also known as distance-based pricing. Longer distance trips cost agencies more per mile of service, so it makes sense to charge more for these trips (Cervero 1982, 321). However, distance-based pricing adds complexity passengers' understanding of fares and could discourage ridership (Pucher and Kurth 1996, 286). This issue can be overcome by getting more people to use electronic fare cards, so they don't have to worry about having correct change, and by discussing the benefits and costs of different fare structures with the public (Cervero 1982, 321).

King County Metro currently employs both of these strategies, although it could be possible to raise additional revenue by increasing peak and long-distance fares further.

2.2.4 Fare Card Policies

Literature concerning the benefits of innovative transit fare card policies mostly touts the increases in ridership, but not necessarily revenue growth. However, changes to fare card policies can act as a "carrot" to revenue-increasing measures that act as a "stick", which when combined get more people to use transit, which is the overall goal.

FitzRoy and Smith identified one major policy from Freiburg, Germany that can be applied to fare cards that considerably improved ridership without drastically increasing the transit agency's operating deficit. This policy was the introduction of affordable, regional, monthly transit passes that were transferrable between family and friends. This type of pass allowed people to travel across the region without worrying about or having to purchase different kinds of fare cards. By being transferrable, the passes were able to entice riders who otherwise would not have paid for a pass themselves. Another innovative fare card policy was introducing a park-

and-ride combination ticket, which made it easier for those living farther from the city center to access transit (FitzRoy and Smith 1998, 163 and 167). The "sticks" needed to balance out the draw of the passes include dense and compact land use planning, restricting city centers to cars, reducing the speed limit on non-arterial streets, and charging more for and eliminating car parking (FitzRoy and Smith 1998, 170).

Other changes to fare cards were identified by Pucher and Kurth in Germany, Austria, and Switzerland that can be summarized as tailoring tickets to riders' needs. More options were introduced in addition to daily, monthly, annual tickets, and one-trip ticket prices were increased to give infrequent riders more options and more incentive to ride transit. Also introduced were monthly and annual passes for employers and semester passes for students, both of which are available to Metro riders under the ORCA program. Another innovative practice is the use of combination tickets that include transit passes in tickets purchased for concerts, sporting events, conventions, amusement parks, and festivals (Pucher and Kurth 1996, 286-287). Metro could look into providing a ticket option like this, since King County is home to lots of attractions like these and ORCA currently doesn't offer a day-pass type of card. This could be especially popular with tourists.

2.2.5 Fuel Taxes

An empirical assessment of fuel taxes in Germany is particularly useful for understanding revenue impacts of this and other taxes, because it looks at not just the revenue generated by the tax for transit but the impact the tax has on transit ridership and costs. Storchmann confirmed that increases fuel taxes definitely increases revenues for transit, but they also increase costs. Transit agencies plan their fleet sizes and staffing levels for the peak rush hour periods, and

about half of transit deficit is a result of these requirements during peak periods. The fuel price increases cause people to switch from driving to transit mostly only during peak periods. During the non-peak periods, people will not switch from cars to transit, but instead simply not take trips or combine them with their peak-period trips. Therefore, the fuel price increases cause put further demands on maxed out transit service. Ridership will see gains during the peak, but because the peak load has above-average marginal costs and below-average marginal revenues, the added ridership during peak periods will increase deficit (Storchmann 2011, 19-28). Thus, while increases in fuel taxes may lead to substantial gains in revenue and ridership, the additional costs they generate will increase deficits.

2.2.6 Public Support for Taxes

One empirical study by Kallbekken et al. that looked at the public support for three transit taxes is helpful for understanding why the public will or won't support certain taxes. The selection of the three taxes (fuel taxes, road pricing, and parking fees) is less important than why they were supported and the policy implications of this. The study found that the key determinants for public acceptability for all three taxes were: the perceived effectiveness of the taxes at delivering both environmental quality and at reducing traffic congestion; expected distributional effects (i.e. economic cost to others or equity); and the expected impact on personal finances. In addition, the study showed that the public is more accepting of a tax the more it is perceived to reduce external costs (Kallbekken et al. 2013, 74-75).

There are two major policy implications to be gained from these findings. The first is that the public may support taxes for transit if agencies modify certain aspects of their tax plans or educate the public to correct misperceptions about the plans. The example used by the study

authors is that agencies could potentially increase public support for a tax if some of the revenue from it is used to reduce the negative distributional effects of the tax. The second finding is public support for transit taxes across the board could be increased by giving the public more information about how revenues are spent and would be spent. The study showed that people don't believe the government uses public money efficiently, so transit agencies must combat this mistrust if they want to implement new taxes (Kallbekken et al. 2013, 75). Metro will need to consider these implications when evaluating potential revenue sources, so that they can gain essential support of the public for whichever revenue options they chose to pursue.

2.2.7 Land Value Capture

Land value capture is the idea that revenue can be obtained from the rise in value around a rail station. This idea is only recently being applied to bus systems as bus rapid transit becomes more widespread. Bus rapid transit (BRT) aims to provide the frequency and reliability benefits of rail at lower cost. Cervero and Kang looked at the feasibility of using land value capture around BRT stations in Seoul, Korea. They found that BRT can be effective in raising land values for multi-family residential and commercial/mixed-use properties, especially if the stations are planned in areas where these land uses already exist (Cervero and Kang 2011, 103). It is important to note that land values will not immediately rise if BRT is built nearby. To realize benefits of BRT, ahead of time cities must zone for higher density around future stations, work with private developers to develop near stations, and build other infrastructure to enable increased density (Cervero and Kang 2011, 115-116). In the case of Seoul, implementation of BRT also occurred when the government was taking down freeways and attempting to control sprawl. Finally, to capture the increase in land value created by BRT, governments need to create a benefit assessment district around stations (Cervero and Kang 2011, 116).

2.2.8 Targeted Advertising and Partnerships

A new type of advertising and business partnership has become available to transit agencies with the adoption of transit smart cards. Analysis by Paez et al. discovered that certain types of businesses cluster or concentrate to different degrees around transit stations. The information about what businesses or business clusters location around transit stations can be combined with smart card information to identify potential partnerships with transit agencies. "Given the ability of smart cards to store information, various programs could be implemented: for instance discounts/rebates/loyalty points if customers shop and dine on a transit trip" (Paez et al. 2011, 651). Transit agencies could also sell anonymized location data about riders to businesses near transit stations to determine better advertising methods and locations. Transit agencies could also use data on ridership location and demographics to command higher prices for advertising at stations and on transit vehicles based on the idea that an advertiser would know who they're advertising to (Paez et al. 2011, 651).

2.3 Transit Finance in Practice

Transit financing literature of practice also contains information about revenue sources available to local transit agencies and their advantages and disadvantages. The primary sources for transit financing information about revenue are the national Transportation Research Board/Transit Cooperative Research Program, other independent research and advocacy organizations dedicated to improving transportation, and municipalities across the US. Most of these practical literature covers multiple sources of revenue in a single report, and it is not feasible to summarize all of the sections of each report below. However, the ideas they present will be explored further in Chapter 4, Results and Chapter 5, Discussion.

2.3.1 Transportation Research Board and Transit Cooperative Research Program

The Transportation Research Board (TRB) a division of the National Academies, which are private, non-profit institutions that conduct research and advise the federal government. The Transit Cooperative Research Program is a program within the TRB.

The TCRP has published an exhaustive report on transit revenue. TCRP Report 129, *Local and Regional Funding Mechanisms for Public Transportation*, lists numerous funding sources, describes why some are better than others, and describes how to implement them. Implementation steps include how to wage a successful campaign, make changes to laws, and couches chances of success in realistic terms (TCRP 2009a). Two other specific TCRP reports that are useful for understanding new approaches to transit revenue are on coordinating intermodal pricing and increasing advertising revenue. The report on coordinating intermodal pricing focuses on setting the level of transit fares, parking rates, and tolls in a coordinated way to achieve larger goals than if each were approached separately (TCRP 2009b). The report on increasing advertising revenue identifies the best practices for increasing transit's share of advertising expenditures (TCRP 1997).

The TRB also has published a lengthy report on funding via the National Cooperative Highway Research Program, but it is focused on a combination of highways and transit (NCHRP 2006). Other TRB reports focus on vehicle miles traveled and carbon taxes, transit impact fees, and improving fares and funding policies.

2.3.2 Independent Research and Advocacy Organizations

The most comprehensive report published by independent organizations is *Local Funding Options for Public Transportation* by Todd Litman at the Victoria Transport Policy Institute. This report analyzes 18 different revenue sources for local transit agencies using eight criteria that align well with this thesis: potential revenue, predictability and sustainability, horizontal and vertical equity, travel impacts, strategic development objectives, public acceptance and ease of implementation. The report paints a realistic picture that there is no magic bullet for transit revenue and that a combination of funding options is needed. It will be helpful to see how the revenue options available to Metro measure under the eight criteria in the report (VTPI 2013).

The other major organization with pertinent literature on revenue is American Public Transportation Association (APTA). The information published by APTA is less prescriptive and more descriptive of the he transit industry. APTA has published a report and survey results on the impact of the financial recession of 2008-2009, which provides information on how various sources of revenue fared during this period. These reports indicate that transit agencies all fared differently during the recession but all share a common concern of uncertainty about the future (APTA 2009 and 2010). Other APTA reports include extensive facts and figures on the transit sector in the US.

Other independent organization publication topics include overall funding options (DeGood et al. 2014, Imus, 2007, and Smart Growth America 2014), land value capture (Fogerty 2008 and Johns et al. 2009), and user fees (Christman 2013).

2.3.3 Municipalities

City of Seattle

The City of Seattle Department of Transportation (SDOT) prepared a chapter within the Seattle Transit Master Plan Briefing Book that covers best practices for financing transit operations. It provides reasoning for the need to increase local funding for transit, mainly the susceptibility of sales tax revenue to economic downturn other taxes being at their maximum allowed levels (SDOT 2011, 7-65 to 7-66). It then presents a number of transit revenue options, including the following:

- Parking meter revenues;
- Sponsorships, naming rights, and expanded advertising;
- Joint development, land sales, or sale of development rights of transit agency property;
- Taxation under a Transportation Benefit District (TBD);
- Fuel taxes; and
- Congestion pricing and toll revenue (SDOT 2011, 7-69 to 7-72).

City and County of San Francisco

San Francisco created a task force to identify new transportation revenue sources. The top potential sources they identified were:

- New regional bridge tolls;
- Federal grants;
- State greenhouse gas cap and trade revenue;
- General obligation bonds for infrastructure improvements;
- Vehicle license fee increase; and

- Sales tax increase (Zmuda 2013, 27-29).

Washington State Transportation Commission

The Washington State Transportation Commission prepared a comprehensive road tolling study in 2006 that identified some potential linkage between tolling State roads and providing funding to transit. The report looked at how toll revenue should be used, and one identified use is to use tolls to fund transit, because it could help address the public's perception that tolling roads only helps the rich (Ford et al. 2006, 19). The report also added that providing toll revenue to transit could offset the financial impact tolling has on those who can't afford tolls or have the means to use electronic toll systems. (Ford et al. 2006, 25). The report noted that there are multiple possible toll projects statewide, and that people in WA prefer the "user pays" tolling scenario to taxes (Ford et al. 2006, 14).

Georgia Department of Transportation

A Georgia Department of Transportation study looked at the implications of three alternative revenue sources for transportation planning. The study authors selected tolls, fuel tax, and vehicle miles traveled tax for their analysis because they believed these sources could generate substantial revenue and provide incentives to change travel behavior. The study looked at the advantages and disadvantages of each, and stated that the public is generally more accepting of tolls than the other two sources. Tolls also be adjusted by time of day to address congestion, but people can utilize other non-tolled routes. Fuel taxes were seen as a good option for revenue and reducing congestion, but people increasingly have more fuel efficient vehicles, can go to different jurisdictions to purchase fuel, and fuel efficiency varies between people. Using a VMT

tax instead of a fuel tax can address these issues and still reduce congestion. The study noted that a variable VMT charge based on congestion could be successful if the cost of implementation and issues over privacy could be overcome. An interesting revenue option not mentioned in other literature is the possibility of increasing fuel taxes while at the same time providing motorists the option of voluntarily choosing instead to pay a VMT tax (Sjoquist et al. 2011, 171-177). This option could be implemented by King County as a pilot study to see if it increases revenue while alleviating privacy concerns by making VMT monitoring voluntary.

2.4 Literature Review Summary

This chapter identifies a framework for the proposed research in this thesis. The theoretical literature provides good reasoning for considering amount, growth, equity, and the government decision-making process when choosing revenue sources. The empirical literature presents good case examples of some revenue measures that have helped transit agencies throughout the world. The practical literature provides a lengthy menu of revenue options that Metro could choose from, along with the benefits and costs of each option.

There is limited research that specifically focuses on individual transit agencies' funding challenges and how they've been successful or not in solving them. Existing research addresses the after effects of revenue measures, but does not address why certain measures were chosen over others and what legal and political limitations agencies faced in their decision-making. Other research presents lots of revenue options but does not say how to choose them under specific circumstances. Using the methodology in the following chapter, this thesis will combine the lessons learned from case examples with the wide range of identified revenue possibilities to come up with the best revenue options for the specific challenge faced by Metro.

3 Methodology

3.1 Research Questions

This chapter describes the proposed methodology that will address the research questions introduced previously in Section 1.2, *Proposed Research*. The main research question is: How can King County Metro (and other transit agencies in similar fiscal situations) increase its revenue to not only fund existing bus service, but provide more service as the County's population and ridership increases? The main research question is broken into three sub-questions:

1. What are the current proposals for meeting Metro's projected operations revenue shortfalls, and how effective would they be at funding increased service?
    a. Analysis of proposed of plans A, B, and C, including their ability to grow, their level of equity, and political feasibility
2. Are there other sources of revenue that Metro could use? Analysis methods for this question include:
    a. Literature review of potential revenue sources, including their ability to grow and their level of equity (Chapter 2)
3. What political restrictions prevent Metro from pursuing the best revenue source? Analysis methods for this question include:
    a. What powers are currently given to the County by the State?
    b. Would statutory changes be needed to enable Metro to use these revenue sources?
    c. Which of the additional revenue sources are available to Metro without statutory changes?
    d. Which new revenue sources would require a vote of County residents?

e. Which new revenue sources would require changes to State law?
f. Should certain revenue sources be pursued at different time frames, depending on the need for changes to County/State law?

3.2 Defining the Necessary Level of Revenue Growth

This thesis seeks to determine how Metro can increase revenue for operations. This question is based on the assumption that service needs to grow. The reasons for this assumption are based on existing unmet service needs, growth in ridership, and projected population growth in King County.

3.2.1 Current Service Needs

As mentioned previously in Chapter 1, Metro faces a $75 million budget gap. If it is not filled by mid-2014, Metro will cut approximately 17 percent of its system, or about 600,000 service hours (King County Metro 2014d). It is important to note that if $75 million in additional revenue is found, it will only pay for existing service.

However, Metro's 2013 Service Guidelines report that to meet quality objectives and target levels for service, Metro would need to add approximately 510,000 annual service hours. "These needs represent an increase of about 15 percent above the current system size. These investments are necessary to provide reliable services with adequate transit capacity to destinations throughout King County" (King County Metro 2013a). Table 3-1 details the breakdown of the need for service hours by type of improvement. No calculation has been provided by Metro for the amount of revenue needed to add the 510,700 service hours, but I have estimated it to be between $63.8 and $66.1 million based on calculations from the budget shortfall data. For

simplicity, $65 million will be used as the revenue needed to increase service by 15% or 510,700 service hours.

Table 3-1: 2013 Investment Needs (Based on Spring 2013 Data)

Priority	Investment Area	Estimated Annual Hours Needed
1	Reduce passenger Crowding	15,400
2	Improve Schedule Reliability	27,800
3	Increase service to meet target service levels in All-Day and Peak Network	467,500
	Total investment need	**510,700**
4	Increase service on high-productivity routes: A substantial portion of the growth needed to meet the *Transportation 2040* goals (an additional 2.6 million annual service hours) will be on high-productivity services.	

Source: King County Metro 2013a

The existing service needs specified above can be explained by the fact that Metro suspended service increases in the past to reduce funding gaps. In 2006, voters approved the Transit Now initiative, which was a 0.01% sales tax increase that "…was intended to fund an expansion of transit service by up to 20 percent over 10 years to keep pace with regional growth and demand" (King County Metro 2011a). Due to reductions in sales tax revenue from recession, in 2009 Metro suspended remaining parts of the Transit Now program that hadn't been implemented yet (King County Metro 2014d). Metro only added 62,000 out of 350,000 planned service hours for high ridership routes and corridors, 19,300 out of 50,000 for rapidly developing areas, and 56,500 out of 130,000 for service partnerships. This left approximately 392,200 needed service hours unfunded. The RapidRide program survived as a part of Transit Now because Metro was able to secure grant funding to pay for it (King County Metro 2011b).

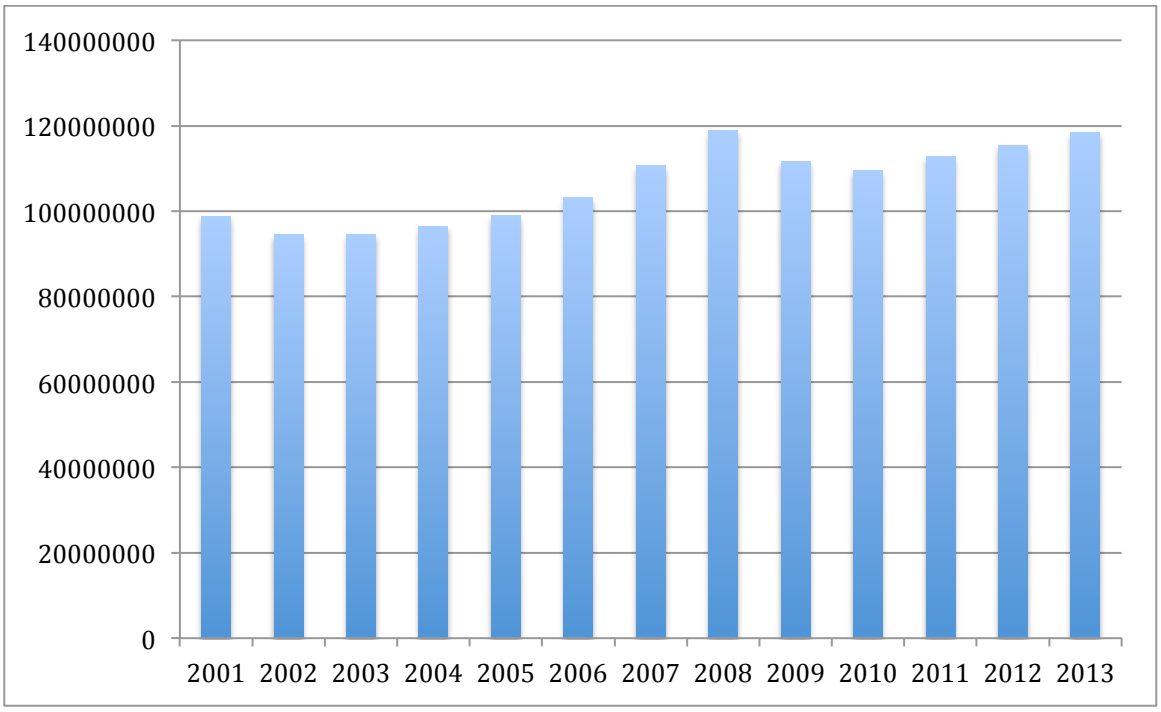
Another explanation for the need to increase current service levels is that Metro "cut bus service by 75,000 hours in 2010-2011 to reduce spending" (King County Metro 2014d). This cut combined with the unmet service hours in Transit Now adds up to approximately 467,200 unmet service hour needs. As specified in Table 3-1 above, the remaining service hour needs are needed to reduce passenger overcrowding and improve schedule reliability.

3.2.2 Ridership Growth

As shown in Figure 3-1, annual Metro ridership grew by approximately 20.07% from 98.7 million in 2001 to 118.5 million in 2013 (King County Metro 2014f). 2001 is the earliest available year for data, and 2013 is the year of most recent annual data (still an estimate) (King County Metro 2014g).

Metro ridership peaked in 2008 at 118.8 million and fell to 109.6 million in 2010. Since 2010, ridership has steadily increased by an average of 2.64% each year for the past three years. Ridership for 2013 almost returned to the peak in 2010, and could equal or surpass this number when the final ridership number is finalized.

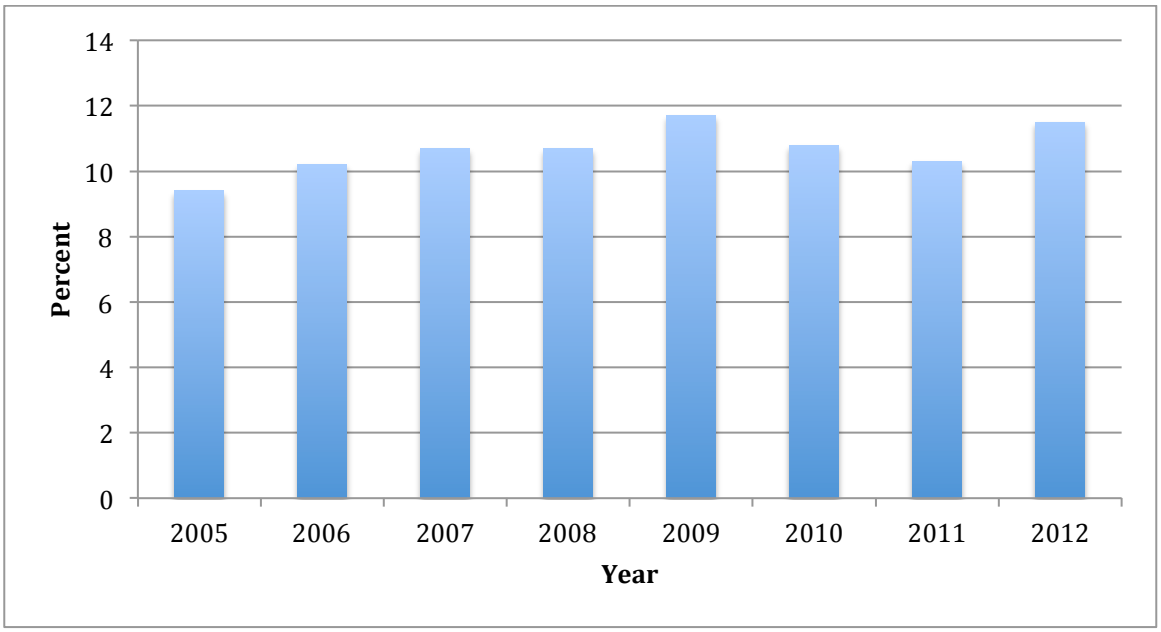
Figure 3-1: Metro Ridership 2001-2013



Source: King County Metro 2014f

In addition, the American Community Survey shows that the share of trips taken by transit in King County has increased in the last few years. Figure 3-2 shows that the transit mode share has increased from 9.4% in 2005 to 11.5% in 2012.

Figure 3-2: King County Transit Mode Share



Source: U.S. Census Bureau 2014

Increased use of transit is not isolated to King County, WA. Transit ridership in the U.S. in 2013 reached its highest level since 1956 at 10.7 billion trips. It has increased by 37.2% since 1995, which is faster than the rate of population growth for the country of 20.3%. In addition, the national share of trips taken by transit has increased from 4.6% in 2000 to 5% in 2012 (Copeland 2014).

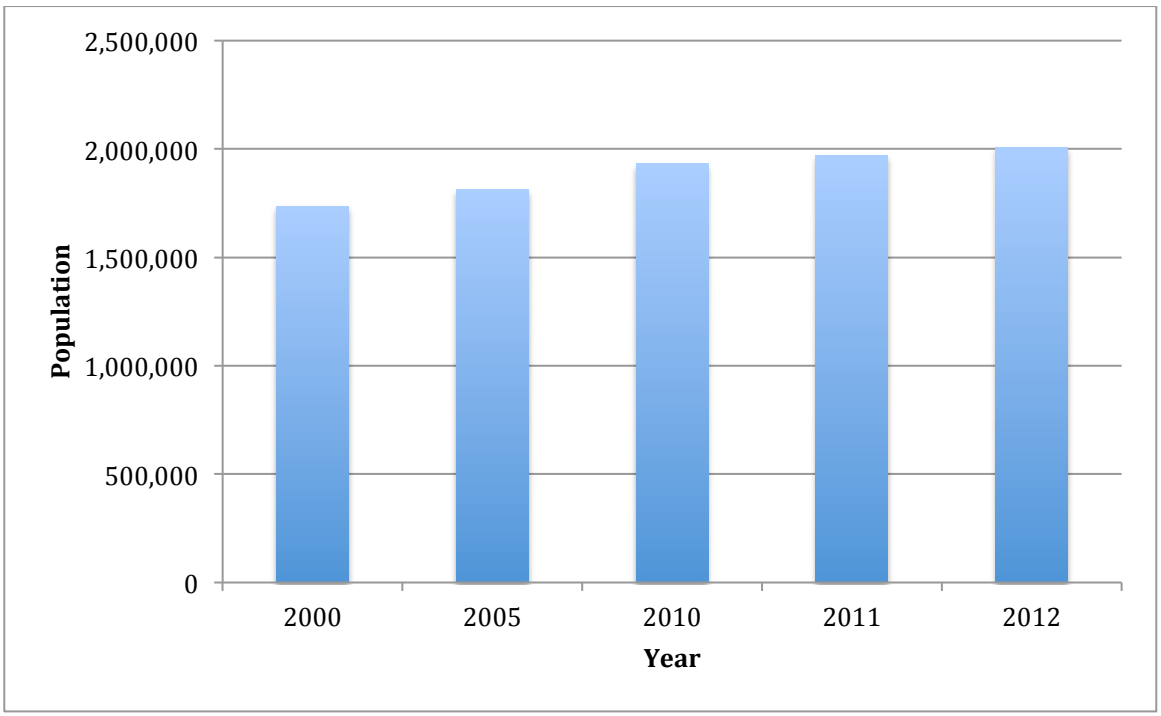
There are number of factors that are contributing to this ridership growth in King County and nationally. People are still feeling the effects of the economic recession. Gas, cars, and car insurance are expensive, and some people are choosing public transportation as a more affordable option. More people are also choosing to live in more urban and compact neighborhoods served by transit. Mobile devices also provide people with bus arrival information and allow them to be more productive once on a bus (Seattle Times 2014a).

Future projections for Metro ridership are unknown. To estimate potential demand, we can look at projections for future population growth, which is described in the subchapter below.

3.2.3 King County Population Growth

King County's past and expected future population growth support the idea that transit ridership will grow. As shown in Figure 3-3, U.S. Census data shows King County's population increased by 11.18% between the years 2000 and 2010. This substantial growth was outpaced by the 20.07% increase in ridership from roughly the same period (2001-2013). According to more recent estimates, the American Community Survey reports that King County's population has increased by 1.99% between the years 2010 and 2011 and by 1.91% between the years 2011 and 2012.

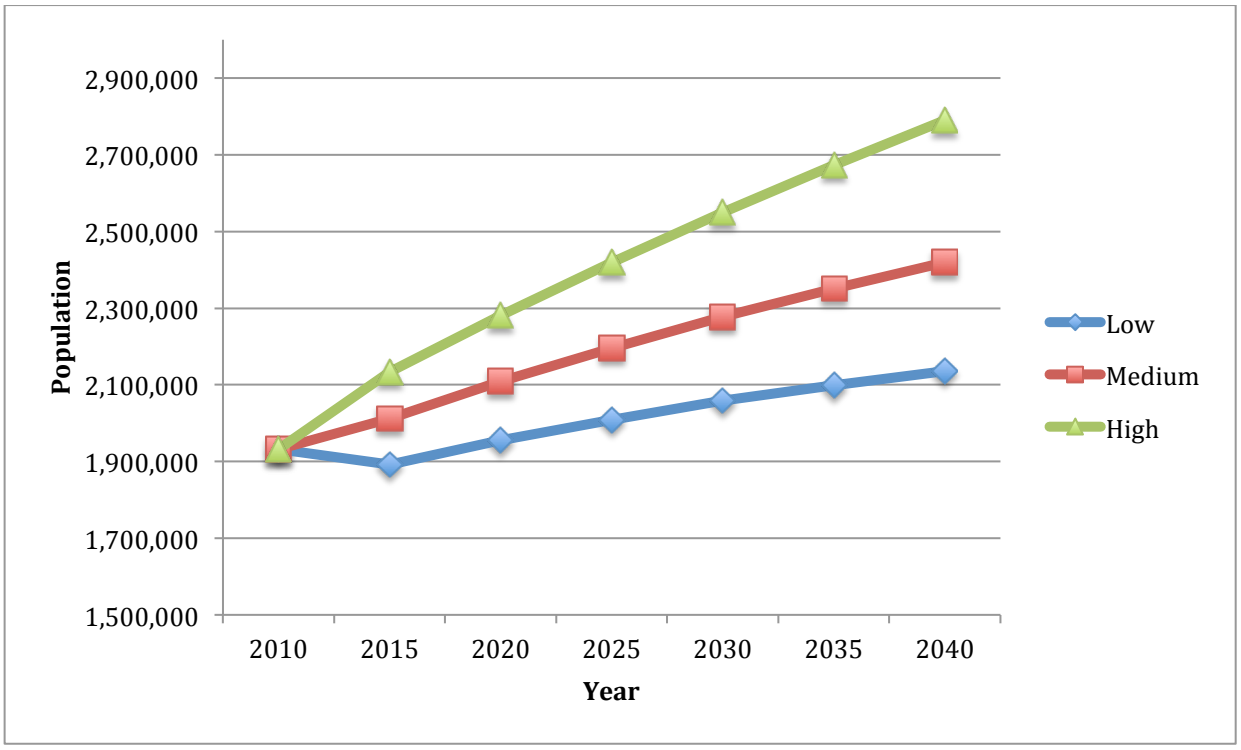
Figure 3-3: King County Population (2000-2012)



Source: OFM 2012a

Assuming that population growth continues to increase, it is expected that transit ridership would increase, barring any drastic changes to spending. The State of WA Office of Financial Management (OFM) prepares population projections for counties as required by the Growth Management Act. OFM's range of projections for King County is show below in Figure 3-4. Under the medium growth scenario, OFM predicts that King County's population is expected to grow by an average of 3.83% every five years (a total of 25.25%) over the next 30 years (OFM 2012b).

Figure 3-4: King County Population Projections (GMA Low, Medium, and High)



Source: OFM 2012a

A continued rise in King County's population would be expected to increase the demand for transit service. While it is not feasible in the scope of this thesis to extrapolate the associated ridership growth assuming this population increase, it is safe to say that ridership is expected increase at some level. This increase in ridership would be expected to increase demand in transit service and hence, drive demand for additional revenue.

3.3 Proposed and Alternative Revenue Plans

As mentioned in Chapter 1, *Introduction*, Metro faces potential service cuts of up to 17% unless new revenue sources can be identified. Three plans have been identified to maintain service: a County Motor Vehicle Excise Tax; a County Vehicle Registration Fee and Sales Tax Increase; and Community Mobility Contracts. These plans and alternative revenue options are described below.

3.3.1 County Motor Vehicle Excise Tax

Metro's preferred new revenue source is a countywide motor vehicle excise tax (MVET). A MVET is a tax that takes a percentage of the value of a vehicle annually (DOR 2010). As noted in subchapter 3.2, Metro relied heavily on a statewide MVET until 1999, until it was repealed by the State legislature.

House Bill (HB) 1959 (and companion Senate Bill (SB) 5861) has been proposed to permit the Metropolitan King County Council to enact or get voter approval of a countywide 1.5% MVET. 60% of the MVET revenue would go to transit and 40% would go to the operations and maintenance of county and city roads. It's unclear if these road funds go fund other transportation improvements such as bicycle and pedestrian improvements since no additional

definition of "operations and maintenance" is provide in the bill (HOR 2013). The bill would also allow counties and cities to levy a $40 car-tab fee, which is a flat rate fee levied when a vehicle registration is renewed (Lindblom 2013a).

HB 1959 has not gained enough support in the legislature to be brought to a vote on its own. Without legislative support of the individual bill, it's necessary to be merged with the overall state transportation package to have hope of passage. There is speculation that many lawmakers will only support HB 1959 as part of a larger transportation package that includes a large amount of funding for highway megaprojects. It is also speculated that some opposition exists to HB 1959 because some lawmakers want car tab fees to be spent on State highways and ferries, not transit (Lindblom 2013a).

The transportation package has been discussed through the regular 2013 legislative session, 2013 special sessions (Associated Press 2013), and the regular 2014 legislative session (Rosenthal and Garber 2014). As of this writing, the $10-bilion package has failed to make it out of negotiating sessions, and the earliest hope of it being put to vote is a 2014 special session, if called to convene by the Governor or the legislators themselves.

3.3.2 Increased County Vehicle Registration Fee, Sales Tax, and Bus Fares

Metro's second choice for new revenue was an increase in the County's vehicle licensing fee and sales tax and Metro's bus fare. To increase these fees, the County was required to form a transportation benefit district (TBD), which allowed the County to go to the voters for approval of new funding for transit, roads, and other transportation needs. The King County Council did

just this on February 11, 2014, with the formation of the King County Transportation District (King County Metro 2014h).

The Transportation District then approved a resolution to hold a public vote on April 22, 2014 on its proposed new revenue sources. The new revenue would have come from a $60 annual vehicle fee (an increase of $40 over the existing but expiring $20 fee), a 0.1% increase in sales tax, raising approximately $130 million per year for ten years. 40% of the revenue would have funded road and other transportation improvements in cities and unincorporated King County, while 60% would fund Metro. However, the vehicle fee and sales tax measure was defeated by votes in April 2014 (King County Elections 2014).

Occurring simultaneously, but not part of the TBD action, is a fare increase that was originally included in Metro's long range planning. Metro plans to increase all fares by $0.25 starting March 1, 2015. To partially offset the regressive nature of sales tax and bus fare increases, Metro is also proposing a low-income fare to begin at the same time. This fare will cost $1.50. The increase in fares is expected to generate an additional $6.6 million every year (King County Metro 2014i).

3.3.3 Community Mobility Contracts

After failure to pass the increased county vehicle registration fee/sales tax measure before the voters, King County created a program called Community Mobility Contracts that would allow cities or groups of cities within the county to purchase transit service. This program is intended avert transit cuts and serve as a bridge until the County can find another more permanent and economically sustainable revenue source. Each city or group of cities would be able to decide

how they would pay for additional transit service. Because no cities would be able to vote on any revenue package before September 2014, the first round of Metro's service cuts would be implemented. However, the Community Mobility Contracts could help avoid or lessen the later rounds of service cuts in 2015 (King County Metro 2014j).

The only city to propose an agreement at the time of this study's writing is Seattle. Seattle already formed a transportation benefit district (TBD) in 2010 through which it currently collects an annual vehicle license fee of $20 (City of Seattle 2010). With voter approval, additional funding sources are available to the Seattle TBD: property taxes (a one-year excess levy or an excess levy for capital purposes), a sales and use tax up to 0.2%, a vehicle registration fee up to $100 annually, and vehicle tolls (City of Seattle 2014a). The City could also raise new revenue without voter approval through an increase in its commercial parking tax or reinstating a per-employee tax on businesses (i.e., a "head tax").

Seattle's proposal, which would require voter approval, would use the same revenue elements as that originally proposed by the County: a $60 vehicle license fee and 0.1% sales tax increase, but be limited to only the City. The vehicle license fee would raise $24 million per year and the sales tax increase would raise $21 million for a total of $45 million. $40 million of Seattle's funding proposal would preserve about 90% of the bus service proposed to be cut by Metro (Seattle 2014). $3 million of the City's proposed vehicle license fee/sales tax proposal would go toward a Regional Partnership fund, which would contribute 50% toward the cost of preserving peak hour service on routes shared by other areas (Seattle 2014). Finally, $2 million of the City's proposed revenue would go toward a $20 low-income vehicle fee rebate (City of Seattle 2014b).

It's unclear how the proposal for Seattle to purchase in-city routes would affect the rest of the County's Metro operations or revenue, as the details of other cities' proposals have not been released (Schiendelman 2013).

3.3.4 Other Revenue Options

As described in subchapter 3.3.2, existing service is not meeting current transit needs. In addition, ridership demand and are expected to increase, placing further demands on service. Therefore, it may be necessary to explore other revenue plans beyond those covered in the subchapters above. In addition to analyzing MVET, vehicle registration fee, sales tax, fare increase, and Seattle purchasing in-city routes, this thesis will also explore the following revenue options:

Traditional Tax- and Fee-Based Transit Funding Sources

- Property Tax
- Station Rents or Concession Agreements
- Advertising
- Sponsorships
- Fare Structure Changes
- Fuel Tax

Common Business, Activity, and Related Funding Sources

- Employee/Business Tax
- Utility Tax
- Parking Tax
- Income Tax

Revenue Streams from Projects (Transportation and Others)

- Land Value Capture
- Station Air Rights

New "User" or "Market-Based" Funding Sources

- Road Tolls
- Congestion Pricing
- Vehicle Miles Traveled Tax

Other Funding Sources

- Regional Transit Agency Consolidation

3.4 Measuring and Comparing Revenue Sources

The revenue options proposed under subchapters 3.3.1 through 3.3.4 will be compared under the following criteria using existing literature identified in Chapter 2:

1. Amount
    a. Revenue must be able to fill Metro's existing $75 million budget gap in 2014.
    b. Revenue must be able pay for existing unmet service needs (service growth of 15%)
    c. Revenue must be able to accommodate future service needs, which are expected to grow. King County's 2012 Strategic Climate Action Plan identified three targets for future boardings based on PSRC Transportation 2040 plan (King County 2012):
        - 122 million passenger boardings by 2015;
        - 137 million passenger boardings by 2020; and
        - 214 million passenger boardings by 2040.
2. Equity
3. Institutional Environment
    a. After determining the best revenue option(s) in terms of amount and equity, this study will analyze the current institutional or political environment to determine if there is something standing in the way of implementing the best revenue source(s). This study will identify how political obstructions restrict the best revenue option(s) if it's determined that this is the case.

Determining the amount of revenue that could be generated for each source under evaluation is possible for the proposed options (MVET, increased vehicle registration fee/sales tax, and community mobility contracts), because the formal proposals include anticipated revenue amounts. For revenue options such as a payroll tax, it's possible to estimate the amount of potential revenue that could be generated based on the maximum tax levels permitted by the State and the approximate number of employees in King County. For most of the other revenue options, the potential amounts that could be generated are generalized based on existing literature, especially the work of Todd Litman (2013) and the Transit Cooperative Research Program (2009a).

Similar to analyzing the amount of revenue that could be generated, analyzing the equity impacts is easier for revenue options that have formally been proposed, as the exact tax/fee types and structures are known. Equity impacts can then be determined by combining this information combined with insights from the existing equity literature in Section 2.1.2. For other revenue options, equity impacts are generalized based on general tax/fee types that are discussed in the existing literature, especially the work of Todd Litman (2013) and the Transit Cooperative Research Program (2009a).

Insight into the institutional environment is provided by not only by State and local statutes and public vote results, but also from extensive media coverage of transportation issues in King County and WA and government reports.

4 Results

4.1 Comparison of Revenue Sources

Below is a comparison of the potential revenue options that could increase King County Metro service. Actual values for revenue amount are available for the first three options (MVET, license fee/sales tax, and Community Mobility Contracts), as governments have proposed these. The amount of revenue expected to be raised by the remaining options is generalized, because these options have not been officially proposed. A matrix of the potential revenue options in Table 4-1 summarizes the amount of revenue each source could generate, its equity impacts, and political feasibility.

Not every local transit revenue source is included for comparison. Excluded are those that apply to capital funding and those that are tailored toward rail transit, which offers more options based on the nature of ownership of stations, tracks, and greater influence on surrounding areas.

4.1.1 County Motor Vehicle Excise Tax

As discussed in section 3.3.1, House Bill 1959 would permit King County to enact an annual 1.5% motor vehicle excise tax (MVET) and an optional $40 car-tab fee. 60% of the MVET revenue would pay for transit and 40% would pay for roads. The Senate Transportation Committee roughly estimates that this MVET could raise approximately $130 million annually, or about $78 million for transit (Smith 2013). This MVET revenue would cover King County Metro's $75 million budget shortfall, but this revenue source alone would not pay for the additional current system needs (15% growth) of approximately $65 million identified in Section 3.2.1.

Table 4-1: Summary of Potential Revenue Options

	Revenue Amount	Equity	Political Feasibility
Current Proposals			
Motor Vehicle Excise Tax	Would have met shortfall but would not grow revenue at proposed level	Equitable	State action needed to allow local vote
Sales Tax and Vehicle License Fee	Would have met shortfall but would not grow revenue at proposed level	Inequitable	Failed before voters
Community Mobility Contracts	Varies based on revenue source chosen by cities	Varies based on revenue source chosen by cities	Will be put to local voters
Other Options			
Traditional Tax- and Fee-Based Transit Funding Sources			
Motor Fuel Tax	Declining	Regressive	Requires change to State law
Property Tax	Growth Potential	Progressive	Requires change to State law
Facility Leases and Concession Agreements	Low	Limited impacts to equity	Can be implemented now without vote or law change
Advertising and Sponsorships	Moderate	No equity issues	(1) Wraps and sponsorships - can be implemented without vote or law change (2) Bus shelter ads - requires change to City law
Fare Structure Changes	Low	Regressive - can be balanced with low-income fare	Can be implemented now without vote or law change
Common Business, Activity, and Related Funding Sources			
Payroll Tax	Low to moderate	Vertically inequitable	(1) Requires voter approval for flat rate (2) Requires change to State law for percentage tax
Parking Fees/Taxes	Low to moderate	Slightly regressive	(1) Charging for park and ride can be implemented now (2) Agreements needed for cities to share parking revenue with county (3) Parking property tax requires change to State law
Utility Tax	Low	Regressive	Public vote required
Income Tax	High and growth potential	Progressive	Requires court challenge or constitutional amendment
Rental Car Tax	Low	Regressive	Requires change to State law

Revenue Streams from Projects (Transportation and Others)			
Land Value Capture	Low	Mixed	Requires change to State law
Station Air Rights	Moderate	Mixed	Can be implemented now without vote or law change
Impact Fees	High but variable	Uncertain	Requires change to State law
New "User" or "Market-Based" Funding Sources			
Road Tolls and Congestion Pricing	High	Regressive if no other travel option, more progressive with revenue directed to transit	No law prohibiting but would have to work with state on future tolling project
Vehicle Miles Traveled Tax or Emissions Fees	High but declining	Mixed	No law exists – effective Implementation requires State action

Sources: Litman 2013, TCRP 2009, and others referenced throughout Chapter 4 of this study.

In addition, the MVET estimates assume constant annual growth but research indicates that the absolute number of vehicles peaked in the U.S. in 2008 (Sivak 2013, 10). While this may be due in part to recession, vehicle ownership per capita actually peaked prior to the recent recession, indicating that broader societal changes may be reducing demand for vehicles (including increasing use of public transportation) (Sivak 2013, 10). This means that the estimated MVET revenue may decline over time, partly as a result of the success of transit.

One of the advantages of the countywide MVET is that it would be vertically equitable. Because the MVET would take 1.5% of the value of a vehicle annually, those with more expensive vehicles pay more tax than those with less expensive vehicles. By definition the MVET is vertically equitable (i.e., progressive) since those with a higher income bear a greater tax burden than those with a lower income.

A countywide MVET put to public vote in King County would satisfy the equity principle of demand. It would grant a tax to those who want it, assuming county residents would vote in favor of it, and would not impose a tax on those outside the County, who may not want it. However, King County voters face politically inequality because while they would be affected by the MVET, they are unable to participate in the MVET decision-making process. This is discussed further in section 4.2.

As described in 2.1.2, revenue sources' effects on intertemporal equity generally only apply to capital funding and not operations funding since capital projects are usually funded before construction and operations are funded annually. However, the ability to finance operations can

have an impact on the future public's transit service. This applies to the MVET and all other revenue sources analyzed in this chapter. If revenue is not found to make up Metro's budget shortfall, service will be cut and this will affect future users of the bus service directly. It will also establish a new baseline of service that is 17% less than current service. Starting from a lower service baseline will add additional challenge to grow service.

4.1.2 Increased County Vehicle Registration Fee, Sales Tax, and Bus Fares

As discussed in Section 3.3.2, the King County Council formed a King County Transportation District that allowed it to put to a public vote increases of $40 for annual vehicle fees and 0.1% for sales tax. Like the Countywide MVET discussed above in Section 4.1.1, these fee increases would have raised approximately $130 million per year with 60% of the revenue going to transit and 40% for roads and other transportation improvements. This $78 million for transit would have covered Metro's $75 million budget shortfall. In addition, Metro's separately planned 25-cent fare increase beginning on March 1, 2015 would raise approximately $6.6 million per year. It's unclear if the $6.6 million per year generation of revenue takes into account that revenue from fare increases doesn't increase proportionally to the fare increase and that the revenue declines over time (Litman 2013, 11). Therefore, it's unclear if the fare increase would generate this estimated amount of revenue in the long term. More information on fare changes is provided in Section 4.1.4.

While the leftover $3 million from the vehicle fee/sales tax measure combined with the $6.6 million from fare increases would not have come close to the approximately $65 million needed for current service improvements, they would have allowed for approximately 1.5% growth.

However, voters in an April 2014 election defeated the vehicle registration fee/sales tax measure (King County Elections 2014). The fare increases for 2015 will still go into effect.

One of the main disadvantages of the vehicle fee/sales tax measure is that it would have further increased Metro's reliance on the sales tax. Metro's recent experience with reduced sales tax revenue during the economic recession shows how volatile this revenue source is. Further relying on the sales tax for revenue would benefit Metro while the economy is healthy, but if another recession hits, Metro would find itself without needed revenue. The annual vehicle fee is also subject to the same growth issue as the proposed MVET. With a possible reduction in vehicle ownership over time, Metro would find its vehicle fee revenue unable to keep up with increasing service needs.

The other main disadvantage of the vehicle fee/sales tax measure is that a sales tax and flat vehicle fee (and planned fare increase) are vertically inequitable, or regressive. They both would have resulted in lower-income individuals paying a greater share of their income towards these taxes than higher-income individuals. To attempt to compensate for this inequity, Metro proposed a low-income bus fare (King County Metro 2014i).

In addition, although a countywide sales tax would affect people the same across the entire County, an increased sales tax has a negative aspect in that people can avoid paying it by traveling across County lines to purchase goods and services, since it is not based on place of residence. Most people will not change their everyday shopping, but may travel outside the

County for big-ticket items, reducing potential revenue amounts and hurting businesses based in the County.

Putting the vehicle fee/sales tax measure before voters was a good way to ensure that it was equitable in terms of demand. Rising ridership already showed there is some level of demand, but a vote to the broader public ensured that those who would have to pay more in fees and taxes could make their preference known. While it is good in terms of political equality that King County had the option to put the vehicle fee/sales tax measure to a vote, King County did not have the option to choose another revenue source that could be better. It does not have full control over decision-making that affects itself, as this power rests with the State. This is discussed further in section 4.2.

The vehicle fee/sales tax measure also faces the same intertemporal equity challenges as the MVET since it didn't pass. A reduction in service this year will make it harder to grow service in the future.

4.1.3 Community Mobility Contracts

As described in Section 3.3.3, the County created a program called Community Mobility Contracts that would enable cities or groups of cities in King County to purchase additional bus service. The only city to propose an agreement at the time of this study's writing is Seattle. Seattle's proposal, which would require voter approval, would use the same revenue elements as that originally proposed by the County: a $60 vehicle license fee and 0.1 sales tax increase, but be limited to only the City. The vehicle license fee would raise $24 million per year and the sales tax increase would raise $21 million for a total of $45 million. $40 million of Seattle's funding

proposal would preserve about 90% of the bus service proposed to be cut by Metro (City of Seattle 2014b). This would not make up the entirety of Metro's budget shortfall in the City, nor would it fund any increase in service to Metro routes in the City.

Like the County's vehicle fee/sales tax measure, the City's proposal would also be vertically inequitable, because lower-income individuals would pay a greater share of their income towards these taxes than higher-income individuals. To attempt to compensate for this inequity, the City is proposing to dedicate $2 million per year to a $20 vehicle fee rebate (City of Seattle 2014b).

$3 million of the City's proposed vehicle license fee/sales tax proposal would go toward a Regional Partnership fund, which would contribute 50% toward the cost of preserving peak hour service on routes shared by other areas (City of Seattle 2014b). This helps somewhat in preserving countywide bus service that would be cut, but would not increase service. Seattle's proposal makes it clear that it will not fund the entirety of the County's budget shortfall. Therefore, $30 million outside of Seattle would still be needed to erase the current countywide budget shortfall, and an unknown additional amount of money would be needed to increase service outside of Seattle by 15%. In the event that no other revenue sources are obtained by Metro, it's unclear if other cities in the County would take similar action. Therefore, from a County perspective, Seattle's purchase of in-city routes would not make up the entirety of Metro's $75 million budget shortfall or enable it to grow service countywide but could make a substantial contribution.

The main disadvantage of Seattle moving ahead with a community mobility contract is that it is unknown how this option would affect other jurisdictions in the County and Metro itself in terms of interjurisdictional equity. As mentioned in Section 2.1.2, it's unclear if other less prosperous cities or unincorporated areas in the County would be able to contribute money to paying for routes that travel through their boundaries, even with Seattle's proposed Regional Partnership Fund. It's clear with the proposal of this fund that Seattle expects other cities to contribute. However, they may not want to or be able to, and Seattle could be burdened for an indefinite period of time with propping up Metro. This could also be problematic for intertemporal equity, because Seattle's decision to help fund Metro now would burden future Seattle residents with taxes for the future, and non-Seattle residents could face a "new normal" of a future with reduced bus service if other jurisdictions don't also contribute.

A city's adoption of a community mobility contract would be equitable in terms of demand and political equality, assuming a majority of a city's residents do support this. Maintaining service and providing additional bus service in individual cities with funding from the those cities means that those explicitly requesting it would receive it and those who do not want service do not have to pay for it. For example, while approximately 275 organizations and community leaders, 20 mayors, and seven Metropolitan King County Council members supported the vehicle fee/sales tax measure (Broom 2014a), the Bellevue Chamber of Commerce did not (Broom 2014b). Therefore, the businesses that make up the Bellevue chamber would see community mobility contracts as more equitable since it doesn't force them to pay a tax they don't want to.

4.1.4 Traditional Tax- and Fee-based Funding Sources

Motor Fuel Tax

Motor fuel taxes are taxes on gasoline, usually set at a certain amount per gallon of fuel purchased. In terms of the amount that can be generated, motor fuel taxes have a broad tax base and can provide high amounts of revenue. The TCRP report from 2009 indicated that motor fuel taxes have a steady growth rate over time with no decline expected over two decades (TCRP 2009, 46). However, gasoline consumption in the U.S. has fallen by 5.5% from 2007 to 2013 (EIA 2014), and the US government predicts a decline of at least 7% over the next 25 years (Ydstie 2012). In addition, since motor fuel taxes are set at an amount per gallon and not a percentage of fuel sold, they decline in real terms over time. If a transit agency were to rely on a motor fuel tax as a source of growing revenue, it would need to increase the tax level every year to not only keep up with inflation but also overcome the expected decline in consumption.

In terms of equity, motor fuel taxes are moderately regressive. They are usually set at a per-gallon price, so low-income individuals would pay a great percentage of their income toward this tax, in addition to the fact that they generally drive less fuel-efficient vehicles. However, low-income individuals typically buy less gas (VTPI 2009, 46).

Property Tax

Property taxes are annual percentage taxes levied on property values. They have a broad tax base and are "generally not impacted dramatically with changes in the economy" (TCRP 2009, 43). Being a percentage tax and indexed to inflation, property tax can grow over time, but statutes or economic downturns in the housing industry can also limit growth. Property taxes are generally more vertically equitable than other taxes because those with higher property values pay higher

taxes. In some limited circumstances, they can be regressive if households are property rich but income poor (TCRP 2009, 43).

Facility Leases and Concession Agreements

Transit agencies can lease parts of their facilities or enter into concession agreements with commercial or retail businesses. These forms of revenue generation more often apply to train systems that can lease their right-of-way or host retail businesses in stations. Metro does have 135 park and ride facilities (King County Metro 2014k), and it could lease out the facilities it owns to private operators as a source of revenue. While Metro doesn't have stations in the same way as train systems, it does operate thirteen transit centers where retail businesses could potentially be located.

For smaller systems like Metro, leases and concession agreements would be expected to generate a low amount of revenue (TCRP 2009, 43). Concession agreements would not be expected to have any impacts on equity, but leasing of park and ride facilities could negatively impact low-income users if a private operator charges high fees for parking.

Advertising and Sponsorships

Advertising for bus systems involves companies paying transit agencies for ads on buses, stations/shelters, or printed/online material. Metro currently uses small ads on the outside of buses, some "wraps" that cover the whole bus exterior, and interior ads inside buses. Metro could expand its advertising to more bus wraps (without interfering with passenger views out the windows), ads at bus stops, and ads on their printed materials and website (TCRP 2009, 18). In

2007, it was reported that Metro only generated $558,000 on 25 bus wraps, which equals $22,320 per bus (Gilmore 2008). That same year Pierce Transit was earning $43,000 per bus and Everett Transit was earning $40,000 per bus (Gilmore 2008). Assuming the 2007 rate of $22,320 per bus applied to the entire fleet of 1,500 buses (King County Metro 2013b), Metro could earn $33.48 million per year from bus wraps. Assuming the higher rate of $40,000 per year, Metro could potentially generate $60 million per year from bus wraps.

Sponsorships could potentially increase advertising revenue. Companies could sponsor entire bus routes or multiple routes, ideally near their place of business. Sponsorship could include one company's ads on the interior and exterior all of the buses and stops for an entire route and naming rights for a route. Good opportunities for this include Metro's RapidRide lines that are newer and feature faster travel times and updated technology. An example of where this has been successfully used is Cleveland's HealthLine, which is a BRT route whose name was created through a naming rights partnership between two hospital groups along the route. The sponsorship will generate $6.25 million over 25 years and could be expanded to $18 million if station sponsorships are sold (Hollander 2008). Expanding usage of bus wraps could potentially generate a substantial amount of revenue for Metro.

Advertising typically generates low amounts of revenue (TCRP 2009, 43). Metro is no exception to this, as advertising generates less than 2% of operating revenue (an exact figure is not provided) (King County Metro 2014b). However, sponsorships have the potential to generate a moderate amount of revenue. While they would be unlikely to make up Metro's budget shortfall or meet its growth needs alone, they could potentially add a substantial contribution to the

overall budget picture. Sponsorships could also be used to help expand or upgrade existing routes, or provide necessary revenue to help save existing routes from being cut.

Fare Changes

One way that transit fares can increase revenue is simply by charging more for each ride. A more targeted fare increase can focus on peak and long-distance trips, and Metro already charges more for these trips. However, while fare increases can increase revenue, revenue does not increase proportionally with fare increases. A 10% fare increase usually increases revenue by 5-8% in the first year, and only 1-4% between 5 and 10 years. Therefore, fare increases would increase revenue in the short term but these revenue gains would decline in the long term (Litman 2013, 11). This is not to say that distance and time-based fare differences are not warranted, just that they should not be pursued for revenue purposes alone. In terms of equity, fare increases are vertically inequitable as they hurt those with lower incomes, especially those dependent on transit (Litman 2013, 11).

There are other actions related to fares that don't involve raising them that can help increase revenue through increased ridership. However, they may raise costs at the same time and cancel out any revenue gain. Widespread use of electronic fare cards helps speed up bus trips and increases reliability. Electronic fare cards also make it easier to ride transit because riders don't have to calculate the fare depending on time or distance or make sure they have correct change. All of these things help encourage more people to ride the bus. Metro could expand ORCA card usage by eliminating the $5 fee for purchasing the card, and could offer more locations to buy and re-load ORCA cards (Viriyincy 2011). In addition to eliminating the ORCA card fee, Metro

could offer a day pass, which would encourage more tourists and infrequent transit users to take the bus. Taking this further, Metro could partner with concerts, sporting events, festivals and other events to include a transit pass in the cost of a ticket, like is done in Germany (Pucher and Kurth 1996, 286-287). Metro also already offers discounted monthly and annual passes to universities, and this effort could be expanded. All of these fare changes would most likely generate a low amount of revenue or be cost-neutral, but could increase ridership and improve the system overall (Litman 2013, 13). Eliminating ORCA card fees and improving access to electronic fare cards would make transit more accessible to people of all incomes, which means these decisions would be vertically equitable.

4.1.5 Common Business, Activity, and Related Funding Sources

Employer/Payroll Tax

An employer/payroll tax is a generally percentage tax levied on businesses in a taxing district based on the amount they pay their employees. However, in the State of Washington, the payroll tax by law is a flat tax per full-time equivalent employee (RCW 81.104.150). The amount of revenue that can be raised by this tax can be small to large, depending on the size of the taxing district and the number/size of employers in the district. In Washington, the payroll tax is limited to $2 per employee per month. Assuming roughly 1.2 million employees in King County generating $24 of revenue per year, the maximum the payroll tax could raise per year is $28.8 million (Vance-Sherman 2013). Usually payroll taxes are responsive to inflation and grow over time because they are usually levied as a percentage (TCRP 2009, 44), but a flat tax in this case would not. In addition, an employer/payroll tax is susceptible to declines in unemployment. TriMet in the Portland region depends on the payroll tax for about 50% of its operating revenue, and the recent economic recession increased unemployment and reduced TriMet's revenue from

the payroll tax (TriMet 2014). This led TriMet to face a similar budget shortfall issue as Metro. Another issue that could affect the revenue amount of a payroll tax is the population age of the taxing district. If there are not enough workers to replace the number of baby boomers in the workforce, payroll tax revenue will decline or the tax rate will have to increase to yield the same amount of revenue (Libby 2012).

In terms of equity, a payroll tax is vertically inequitable since it collects the same percentage or amount of tax regardless of wages. This is less equitable than a graduated percentage tax.

Parking Fees

Revenue can be raised through commercial parking fees, including taxes on parking transactions, a property tax on parking spaces, and expanded parking pricing. A parking tax paid by motorists whenever they pay for a parking spot could raise a low to moderate amount of revenue, but it would be unstable. It would horizontally equitable in that it charges motorists for external costs and vertically equitable as it only applies to paid parking (Litman 2013, 22).

A parking levy paid annually for every commercial parking space in a jurisdiction could yield substantial revenue. Revenue would be relatively stable unless parking supply declines. A parking property tax would impact commercial property owners adversely compared to residential, and could raise parking costs and retail prices, which could hurt lower-income persons (Litman 2013, 23).

Charging for parking that is now free could also increase revenue. This could be applied to street parking and park-and-ride facilities. It's unclear how much revenue a county agency like Metro could generate from charging for street parking, since most of the on-street parking is in municipalities like Seattle. However, Portland, OR offers an example of where parking fees were shared with the regional transit provider, Tri-Met. Revenue support was conditioned on Tri-Met's streetcar showing an increase in ridership in the districts subject to parking fees (SDOT 2011, 7-68). A similar arrangement could be set up in cities that Metro serves. Also, as mentioned previously in the Facility Leases and Concession Agreements section, Metro operates 135 park-and-ride facilities in which it could charge for parking. These park-and-ride facilities could generate a small amount of revenue, and equity impacts would depend on the income composition of those using park-and-ride facilities and the provision of alternative means of accessing these facilities (Litman 2013, 24).

Utility Tax

Utility taxes are those levied on any number of public utilities, including communications, electricity, water and sewer, natural gas, and solid waste. Revenues generated by a utility tax are usually small, stable, and regressive if charged at a flat rate (Litman 2013, 18). TCRP reported in 2009 that Pullman, WA uses a percentage utility tax, which would be less regressive, but could still penalize low-income individuals for the use of necessities (TCRP 2009, 20).

Income Tax

Income tax is tax paid by individuals on their earnings. An income tax has the potential to generate a large amount of revenue as all households pay it. Income tax is usually indexed for

inflation and is relatively stable. However, like a payroll tax, income tax revenue is affected by high unemployment that can be experienced during a recession (TCPR 2009, 45).

In terms of equity, income tax is one of the most progressive taxes since it is directly related to income. Income is typically taxed at higher rates as income rises (TCRP 2009, 45).

Rental Car Tax

Taxes on rental cars typically have a narrow tax base; therefore the revenue generated is typically low. For example, Sound Transit levies a 0.8% rental car tax,' which is expected to generate only 0.3% of its revenue in 2014, or $2.7 million (Sound Transit 2013, 11-12). However, King County used a 2% rental car tax to fund a stadium that expired in 2011 (DOR 2014). At this rate, Metro could generate approximately $6.8 million per year in revenue. The growth ability for a rental car tax is unclear, but they are responsive to inflation as a tax on value. While they would be unlikely to make up Metro's budget shortfall or meet its growth needs alone, they could potentially add a small contribution to the overall budget picture.

Rental car taxes are regressive just like sales tax. In addition, they are inequitable in terms of demand, because visitors from out of town who use rental cars don't get to have a say in taxing them (TCRP 2009, 44).

4.1.6 Revenue Streams from Projects

Land Value Capture

Land value capture occurs when new transit lines improve the value of surrounding land and a mechanism is in place to capture this increase in value (TCRP 2009, 28). For land value capture to generate significant revenue, the transit must be high quality, and this usually means trains.

However, a recent study by Cervero and Kang as mentioned in the *Literature Review* section, showed that land value capture is possible to implement around bus rapid transit (BRT). To capture revenue with BRT, an agency like Metro would need to zone for higher densities and create benefit districts around BRT stations, and then build a high-quality BRT system (Cervero and Kang 2011, 115-116). Metro's RapidRide would most likely need substantial improvements before it could be considered true BRT and impact land values, most notably exclusive bus lanes and increased frequency and speed. Land value capture at this point is not a viable revenue source for an agency like Metro but could be in the future. Equity impacts would be mixed, with potentially higher housing costs but better access to high-quality transit.

Station Air Rights

Using air rights to generate revenue means selling the right to develop on top of something. This usually pertains to rail transit stations, but bus agencies like Metro could also sell air rights above its facilities for development. As mentioned previously, King County Metro has 135 park and ride facilities (some are leased fro other owners) (King County Metro 2014k), 13 transit centers (some of these overlap with park-and-ride facilities), seven bases or garages (King County Metro 2008), and a number of other maintenance facilities and other properties. All of these properties represent potential opportunities for selling air rights while maintaining bus operations. The potential revenue is unknown and would depend on the location of each facility. Equity impacts could be negative if housing that is provided in transit-oriented development is unaffordable to most individuals, but the impacts could be positive if affordable housing is included (Litman 2013, 28). Also, providing housing on top of transit centers could save people transportation

costs by eliminating the need for a privately owned vehicle, and in general, increasing the supply of housing could make housing more affordable overall (Glaeser 2013).

Impact Fees

Impact fees are fees paid by new development to pay for their demand on infrastructure (TCRP 2009, 28). Since impact fees are one-time fees on new development, they can generate high amounts of revenue in high-growth areas, but are very volatile (Litman 2013, 25). The equity implications of impact fees are uncertain, as they can increase new housing costs, but wealthier people typically purchase new housing (Litman 2013, 25).

4.1.7 New "User" or "Market-based" Funding Sources

Road Tolls and Congestion Pricing

Road tolls charge drivers to use certain roadways, bridges, and tunnels, and these tolls can be constant or change based on congestion. Typically, the use of toll revenue is legally restricted to the tolled facilities or other facilities and programs overseen by authority collecting the toll. However, tolls are beginning to be used for regional transit. Examples include the New York MTA, Virginia I-95/I-395 HOT Lanes, Maryland HOT Lanes, and I-15 in San Diego (TCRP 2009, 31). Congestion pricing is a type of toll used to limit congestion during peak periods and is typically requires a toll to enter a city center. Congestion pricing has been implemented in London, Singapore, Norway, and Sweden (TCRP 2009, 31). Revenue from tolling and congestion pricing is potentially large, but highly variable depending on how much of any road system or area is tolled and how much of the total could be directed to transit (Litman 2013, 20). Tolling can be regressive if there aren't other travel options for low-income individuals, but this can be offset somewhat if toll revenue is provided to transit.

Vehicle Miles Traveled and Emissions Fees

A vehicle miles traveled (VMT) fee charges drivers for the miles they drive. VMT and emissions fees (discussed below) are seen as potential replacements for a motor fuels fee as vehicle fuel efficiency improves. Oregon has instituted a pilot VMT fee program but that indicated revenues would increase over current gas tax revenues, but this is only in theory as the program is voluntary (Snyder 2013). WSDOT (2013) data shows that 2012 per capita VMT is the lowest its been since 1988, indicating that a VMT fee would likely not result in a growing revenue source. As a flat fee per mile, a VMT fee would be regressive unless other transportation options are available. However, a VMT fee would be more vertically equitable than the existing motor fuel tax, since higher-income drivers can avoid paying gas taxes by purchasing more expensive, fuel-efficient vehicles.

Emissions fees would charge drivers for the amount of air pollutants emitted as they drive. The potential revenue generation from emissions fees is difficult to estimate, as these fees have not been implemented in the U.S. To be effective, they would need to be implemented on a level broader than local or regional (TCRP 2009, 31-32). Equity issues could include the fact that lower-income individuals typically drive older vehicles that generate more pollutants, so they could pay higher fees.

4.2 Current Institutional Environment

The institutional environment can be defined as, “The systems of formal laws, regulations, and procedures, and informal conventions, customs, and norms, that broaden, mould, and restrain

socio-economic activity and behaviour" (Mayhew 2004). Below are descriptions of how the institutional environment in Washington State affects the various available revenue options.

4.2.1 County Motor Vehicle Excise Tax

It's not political feasible to implement the countywide MVET in the current institutional environment. King County must get approval from the State of Washington to put an MVET to a public vote, but the State legislature refuses to allow this. It is speculated that State Legislators will only consider passing HB 1959 as part of the State Transportation Package, because King County-based legislators and voters will not support a package heavily weighted toward road building without inclusion of HB 1959 (Lindblom 2013a).

It's plausible that the State has not acted on HB 1959 because they don't see Metro's funding shortfall as a crisis. While Metro has done a good job publicizing the impending service reductions, government is often reactive instead of proactive. Legislators may only act on HB 1959 if service cuts actually take place, constituents complain, and legislators see the cuts as a threat to the economy and their chances at reelection (Kingdon 1984).

4.2.2 Increased County Vehicle Registration Fee, Sales Tax, and Bus Fares

As mentioned above in Section 4.1.2, King County's measure to increase vehicle registration fees and sales tax failed at the ballot box in April 2014. Therefore, it is obviously not politically feasible to implement this revenue option in this form at this time. It's unclear if voters rejected the measure because they didn't support its goals, its specific revenue option, or if it was not understood correctly. The vote was also held in April and not in the normal November election time to avoid competing with other potential funding measures that could be on that ballot, so

it's possible if the vote was held in November it might have had better turnout and a different result. Since we don't know why all of the voters voted yes or no to the measure, it's unclear if changing the proposal would help or hurt its chances of success at another time.

King County Metro still plans to raise bus fares, and can do so without a public vote. Its inclusion of a low-income fare will likely resolve some of the vertical equity concerns about the fare increase.

4.2.3 Community Mobility Contracts

In the current institutional environment, a community mobility contracts program is feasible and was created by King County on May 12, 2014 (King County 2014j).

The creation of this program enables cities to pay for routes within their jurisdiction, but proposals would require a public vote in each city. In Seattle, support for additional revenue for transit exists in the City, judging by election results for the failed countywide vehicle registration fee/sales tax increase measure. The election results, when viewed by legislative precinct, show that the measure would have passed if limited to Seattle voters (Viriyincy 2014). In addition, the City already uses funds left over from Bridging the Gap, a 2006 levy, to purchase additional service hours from Metro, so this is not un untested strategy (Lindblom 2014). However, it can't be assumed that Seattle voters would approve a citywide vehicle license fee and sales tax increase because they approved one at the county level. People may be concerned about setting a precedent of going it alone and taking on additional monetary burden if other jurisdictions don't also support for Metro.

Motor Fuel Tax

Collecting a motor fuel tax at the State or County level as a revenue source for transit is not feasible in the current institutional environment. The State of Washington Constitution limits gas taxes collected at the state level to be spent on "highway purposes", which do not include transit (State of Washington 2012). Until either a court ruling or a constitutional amendment changes this, motor fuel taxes collected by the State will unable to be used for transit (MSRC 2010, 47-49).

A county may put a motor fuel tax to the vote of its constituents, and a local fuel tax is limited to 10% of the State tax level. There are also restrictions on how the revenue is distributed, based on the population in unincorporated and incorporated parts of counties. Even though it's possible to institute a county motor fuel tax, the Revised Code of Washington (RCW) 82.80.070 limits spending of this revenue on "highway purposes" as defined in the State constitution (MRSC 2010, 47-49).

While it's possible that a court case could challenge the definition of "highway purposes", none are currently working their way through the state court system. Also, no legislators have indicated their willingness to propose or back a constitutional amendment changing this definition. Therefore, the likelihood of a motor fuel tax funding transit in Washington is extremely low.

Property Tax

Property tax makes up approximately four percent of Metro's funding for operations (King County Metro 2014b). Washington State law limits property tax increases in four ways. Property taxes are limited to $10 for every $1,000 of property value (excluding taxes for ports and utility districts). Second, for counties and other junior taxing districts, the limit is $5.90 (excluding school districts). If property taxes get raised in a district that push the total over $5.90, property taxes in a lower district or those that weren't voted for immediately are reduced to stay under this limit. Third, property tax increases are limited to 1% per year without voter approval. Fourth, increases over 1% require 60% voter approval (King County Department of Assessments).

As described in Section 3.3.2, the King County Council formed a Transportation Benefit District (TBD) so that they could put new taxes/fees to a public vote. In addition to the vehicle registration fees and sales taxes, the TBD could also put to a vote property taxes, tolls, and development impact fees. King County indicates that a property tax could only last for one year or span multiple years but only go towards debt retirement (King County 2014). This essentially limits TBD property taxes going toward capital projects that have one-time construction costs, which makes it a poor option for funding Metro operations.

The other option is increasing property taxes in general outside of the TBD. King County could raise property taxes by 1 percent per year without voter approval (Ervin 2011). While it's unclear exactly how much King County would need to raise property taxes to fill Metro's budget gap and grow service, it's assumed it would be more than 1 percent. Therefore, King County would need to put property tax levy lid lift to a pubic vote. It's unclear exactly how close King County is to

reaching its maximum property tax rate, and it's unclear how high it would need to lift the lid to meet its funding needs. After failing to pass Proposition 1 in April 2014, it's unlikely that County voters would approve a different countywide tax, although it's possible.

Facility Leases and Concession Agreements

There aren't any laws or rules preventing Metro from leasing facilities or entering into concession agreements. It's not likely that the public would oppose concessions at transit centers, but there could be substantial public opposition to leasing of park and ride facilities, since those parking would have to pay for something that is now free.

Advertising and Sponsorships

City of Seattle law currently prohibits advertising on bus shelters (SMC 23.55.014), so this law would need to be changed before Metro could implement bus shelter ads as a revenue source. Even though the City is supportive of Metro's service, it's unclear if the City would be change this law because it could result in additional advertising beyond bus shelters, and the City is generally opposed to expanding advertising in the City (Barnett 2014). The City might feel that an increase in advertising is not worth the low amount of revenue to be gained.

Metro currently uses bus wraps, but not through the whole fleet. It's unclear if this is due to being unable to find sponsors for 1,500 buses or if it self-limits the number of bus wraps. Passengers have expressed dislike for the full-bus wraps because they make it more difficult to see out of the windows, especially at night. To minimize pushback from the public, Metro could utilize partial bus wraps that leave 15 inches of window uncovered and explain how the

advertising helps fund bus service. This may allow for them to expand bus advertising while not angering the public.

There aren't any laws or rules prohibiting the sale of naming rights or sponsorships of entire Metro routes or transit centers. It would face the same challenges as normal shelter and bus advertising described above.

Fare Changes

Fare increases require approval of the King County Council. It has already approved a fare increase starting on March 1, 2015. To minimize opposition to this increase, Metro will begin offering a new low-income fare at the same time (King County Metro 2014l). To make changes to he ORCA program such as eliminating the $5 ORCA card fee, offering a day pass, expanding the UPASS system, or partnering with special events, the seven participating transit agencies would need to agree to implement them (ORCA 2014). They have not indicated their desire to make any changes to date, and it's not expected that they will without substantial public feedback.

4.2.4 Common Business, Activity, and Related Funding Sources

Employer/Payroll Tax

King County would need voter approval to implement a payroll tax (RCW 81.104.150). It's unclear if voters would approve this tax after having rejected an increase in car registration fees and sales taxes in April 2014. However, since it would be a tax on employers and not residents directly, it may get more support. Also, the maximum amount is limited to $2 per employee per month, so the maximum impact on employers per year ($24 per employee) is low. Even if this

cost were passed on to employees in the form of reduced wages, it is lower than the $40 increase in car registration fees and 0.1% sales tax increase, although it would not raise as much revenue as those options.

Parking Fees

State law allows counties to levy a commercial parking tax, but it only applies to unincorporated areas (RCW 82.80.030). Enabling counties to collect a commercial parking tax within city jurisdictions would require changes to the law. Alternatively, cities within the County could enter into agreements to distribute their commercial parking taxes to the County (King County Metro 2010).

It's unclear if Metro has the power to levy a usage tax for people parking in commercial lots or a property tax on parking spaces. It's assumed that a parking usage tax would fall under the requirements of a sales tax and would have to be put to a public vote. It's assumed that a parking space property tax would have to conform to existing restrictions on property taxes mentioned above.

There are no institutional barriers preventing Metro from charging for parking at its park and ride facilities. However, those currently using these facilities for free would most likely oppose this measure.

Utility Tax

King County would need voter approval to direct utility fees to fund transit operations, as was done in Pullman, WA (MSRC 2013). Also, using utility taxes for funding public transportation has the lowest public support of all options presented to survey and focus groups; therefore, it is unlikely that the public or legislators would support it (Litman 2013, 18).

Income Tax

The State of Washington doesn't have an income tax. In *Culliton v. Chase*, the State Supreme Court ruled in 1933 ruled that a graduated income tax was unconstitutional because it viewed income as property, and it must be taxed uniformly under Article 7, Section 1 of the State's constitution (Riding 2010). Until either a court ruling or a constitutional amendment changes this, an income tax cannot be used in WA. The last attempt at implementing an income tax occurred in 2010 with Initiative 1098, and it failed to pass with the voters of Washington (Wagoner 2010). Therefore, unless public supports shifts dramatically from where it stood in 2010, it's unlikely that income tax will be an available revenue source for transit operations.

Rental Car Tax

Current State law limits rental car tax revenue for counties to the "construction or operating public sports stadiums or youth or amateur sports activities or facilities" (WA DOR 2014). This law would need to be changed to allow counties to spend rental car tax revenue on transit operations. Changing this law could be possible. The law currently allows Regional Transit Authorities to charge a rental car tax (WA DOR 2014). Legislators could potentially change this to include local transit agencies.

4.2.5 Revenue Streams from Projects

Land Value Capture

The existing laws in WA make land value capture extremely difficult to implement. The Puget Sound Regional Council outlined the biggest challenges to using land value capture:

- State property tax revenues cannot be diverted for local economic development as done with traditional Tax Increment Financing. Traditional TIF was ruled unconstitutional by the Washington State Supreme Court because it diverts state property tax revenues from schools.
- Washington's "budget-based" property tax system makes it impossible for a local government to capture property value increases due to public investments. Property taxes are levied in gross amounts, based on budgetary needs, rather than a percentage of property value. Because of statutory caps on budget amounts, local governments do not capture increases in assessed values under existing law.
- Constitutional limits on property taxes force tax districts to compete for revenues. The Washington State Constitution limits total property tax levies to $10 per $1,000 of property value. If total levies approach this total, then smaller, junior tax districts are prorated.
- Cities have limited debt capacity to take on projects in value capture financing districts. Some cities may be hesitant to take on city-wide debt for improvements that are intended to benefit a sub-area of the jurisdiction (PSRC 2013).

WA's constitution would need to be amended to allow for the diversion of property taxes under TIF. Property tax law would need to be modified to change from a budget-based system to a percentage-based system. A constitutional amendment would also need to be passed to remove total property tax limits so localities aren't competing with each other.

Station Air Rights

There aren't any laws prohibiting Metro from selling air rights over its properties to developers. Metro would have to comply with local land use and zoning codes.

Impact Fees

Under State law, impact fees cannot be used to fund transit operations (Bellingham 2013). They can only be used to pay for public facility improvements, such as roads, schools, and parks that are reasonably related to and benefit new development (MSRC 2010, 80). State law would need to be changed for Metro to use impact fees as a source for transit operations revenue.

4.2.6 New "User" or "Market-based" Funding Sources

Road Tolls and Congestion Pricing

Nothing in WA State law prohibits tolls or congestion pricing going toward transit in general, but the revenue from the three currently tolled facilities in WA (SR 520, Tacoma Narrows Bridge, and SR 167) is dedicated to each facility (WSDOT 2014a, 2014b, 2014c). A Washington State Comprehensive Tolling Study indicated that using toll revenue to support transit service should be considered (WSTC 2008), so it's clear that this could change in the future. In addition, in 2011 voters in WA rejected an initiative that would have prohibited toll revenue from being used for transit projects (Samuel 2011). While there no toll revenue in WA funds transit now and no congestion charges are in existence, it's possible that revenue from these sources could be directed toward transit in the future under the current institutional environment.

Vehicle Miles Traveled and Emissions Fees

No law currently exists in WA regulating vehicle miles traveled or emission fees. In practice, if one of these fees were implemented they would most likely replace the existing statewide motor fuels tax and be limited to funding "Highway Purposes." However, as these types of fees have not officially been outlined, it's possible that a portion of revenue generated could be dedicated to funding transit. One of the major impediments to implementing a VMT fee is overcoming

privacy concerns of drivers who might feel that they are being tracked (Snyder 2013). Governor Jay Inslee has formed a task force to study implementing a carbon reduction plan. It's unclear if they will recommend a cap-and-trade system or an emissions fee, but regardless of their recommendations, Republican lawmakers in the State legislature are strongly opposed to climate change legislation. Evidenced by a 2009 legislative defeat of then Governor Gregoire's cap-and-trade plan, it's unlikely the State will take action on an emissions fee program in the near future (Brunner 2014).

4.3 Summary of Results

This analysis found that there are a number of revenue alternatives to those currently proposed and under consideration by Metro. In fact, some could generate more revenue than the three proposed options and could also be more equitable. The unfortunate reality is that these do not align with political feasibility. The existing institutional environment is severely limiting in terms of the potentially higher growth revenue options available to local transit agencies like Metro. However, there are a number of revenue options that alone can't meet Metro's service needs, but if they were implemented together they could potentially aid Metro in meeting its budget shortfall and increasing service.

5 Discussion

The purpose of this study was to find out how transit agencies like King County Metro could increase revenue so that they could grow transit service. The findings presented in the following chapter suggest that changes to State laws are needed to provide for growing and equitable revenue for transit operations. At the same time, there are revenue options available to local transit agencies that can be implemented directly or with a local popular vote that could bridge the gap between now and when State laws could be changed.

5.1 Findings

Many revenue options exist that could potentially be used by a transit agency to increase revenue to grow operations. However, they vary by growth potential, equity impact, and feasibility under current institutional environments.

5.1.1 Unrestricted Revenue Options

There are a number of revenue options available to Metro that it can begin to implement without a public vote or a change to state law. These include facility leases, concession agreements, bus advertising/sponsorships, charging at park and rides, and selling facility air rights. These options would generally have minimal impacts on equity as well. However, none of them alone would be able to fill Metro's budget shortfall or raise enough revenue to grow service. Implementing a combination of these sources that generate a low to moderate amount of revenue could potentially provide Metro with some revenue increases while it advocates for action from voters or the State legislature.

While no changes to law would be needed, it doesn't mean these options would be unopposed. Charging for parking at park and rides, either outright or through a leasing agreement with a parking vendor, would probably face the biggest challenge. It's likely that people wouldn't want to pay for things that are currently free, and may feel they deserve free parking since they pay for transit fares. Increasing bus advertising and securing sponsors with naming rights could also face opposition. Some people dislike advertisements in general on the basis of aesthetics or other reasons, and some might be opposed to what they see as a private takeover of a public good. The King County Executive and Council members should expect some resistance and be prepared to explain the benefits of these revenue sources. Concession agreements and selling air rights would most likely be viewed as positive as long as they don't disrupt transit service.

Parking revenues generated by cities could also be shared with Metro, and this would require agreements to be made between the two entities. To make these agreements worthwhile to cities, parking revenue would need to increase so cities wouldn't earn less revenue from the agreement. Increased revenue could be obtained by raising parking fees or expanding parking charges where it's currently free. The expansion of parking charges could generate a small to moderate amount of revenue, and the equity impacts would vary based on the specific conditions in each jurisdiction. Charging for parking or increasing its price could also drive more ridership to transit. Cities and the County should expect some public opposition based on ideas that parking revenue should pay for roads or that it should stay in the cities where it's collected.

While all of these options could be implemented without a public vote or change to State law, they could not be implemented overnight. Therefore, if Metro decided it would be beneficial to pursue these revenue options, it should act quickly to attempt to preserve and grow transit service.

Metro is already planning to implement a fare increase. This can be done without a public vote or change to state law, and is proposed to take place in March 2015. It is expected to generate a low amount of revenue that will decline over time, reduce ridership, and would be regressive, although this is mostly offset by the creation of a low-income fare. The fare increase proposal could be improved by only applying it to peak times and long-distance trips, thereby recouping more revenue during a more costly time and on more expensive trips, respectively. Metro could reduce or eliminate the fee for obtaining an ORCA card to improve equity, and introduce day passes to encourage infrequent users to ride the bus more.

5.1.2 Revenue Options that Require Public Vote or Local Law Change

Some options that could generate low to moderate amounts of revenue but require public votes include community mobility contracts, parking revenue sharing agreements, utility taxes, and payroll taxes. Advertising at bus shelters would require changes to City of Seattle law.

The level of revenue that could be generated by community mobility contracts and their equity impacts would vary by the revenue sources selected by individual jurisdictions. Metro could work with cities to choose revenue sources that would generate enough revenue to not only preserve but also grow service in their jurisdictions and also be equitable, such as property taxes instead of vehicle registration fees and sales taxes. Ultimately, it will be up to the cities to decide what revenue options they prefer, or even if they choose any at all, and therefore community

mobility contracts could create inequity between jurisdictions. Depending on how cities pursue additional revenue on their own, bus riders in different areas could face unequal service, and taxpayers could face unequal taxes. Unincorporated areas could be faced with no option to increase revenue and service.

A utility tax could be used as a source of revenue for transit operations but Metro might not want to pursue this, because it would generate a low amount of revenue, be regressive, and face a large amount of public opposition.

A payroll tax also must be approved by a public vote. However, the only form of payroll tax that is allowed under current State law has a low maximum limit and can only be a flat tax, so it wouldn't generate a lot of revenue and would be inequitable. Therefore, Metro may not want to pursue this option without changing State law to enable it to be a percentage-based tax that could raise adequate revenue.

Selling advertising on bus shelters for revenue could potentially generate a moderate amount of revenue and have no effect on equity. However, the City of Seattle, Metro's largest market, would have to change its law prohibiting off-premise advertising, and the City appears inflexible in expanding advertising.

5.1.3 Revenue Options that Require Change to State Law

The three revenue options with the best potential for increasing revenue and that are most equitable cannot be implemented without State action. An income tax could provide substantial revenue and growth potential and could be equitable as a graduated percentage tax. However, a

court challenge or constitutional amendment would be required in WA to allow for the use of an income tax as a revenue source. A countywide property tax also could provide adequate revenue and since it is a percentage tax on wealth, it would be equitable. However, changes to State limitations on property taxes would be necessary for it to be utilized in any substantial way. Road tolls and congestion charges also could potentially generate large amounts of revenue for transit and could be equitable if alternative travel options are available, but the State would have to direct some toll revenue to transit on newly-tolled roads or change the policies on existing tolled roads to allow some toll revenue to go to transit.

The proposed countywide motor vehicle excise tax (MVET) could make up Metro's budget shortfall, but in its current form would not raise enough revenue to grow service. To fund additional service, its proposed taxation rate could be increased or its distribution could be restricted to fund only transit and not roads. As a percentage tax on wealth, an MVET would also be equitable. However, MVET revenue is expected to decline over time with lower vehicle ownership expected in the future. This option also depends on the State passing a law to allow the County to put an MVET to a popular vote.

The next best revenue source is a vehicle miles traveled (VMT) tax or emissions fee. Either of these could generate substantial amounts of revenue, but they are expected to decline over time, and no government has successfully implemented a VMT tax- or emissions fee-based revenue system. To be successful, they would have to be implemented on a statewide scale, and the State would have to set up the system and choose to direct money to transit.

It would not be worthwhile to pursue changes to State laws to obtain revenue from motor fuel taxes, rental car taxes, land value capture, or impact fees. Motor fuel taxes are declining in revenue and are regressive, flat taxes. Rental car taxes would be expected to generate low amounts of revenue. Metro is not expected to build the type of transit that could create substantial increases in property values, so pursuing law changes that would enable land value capture would not be worthwhile at this time. Also, the variability of impact fees is not well suited to stable growth needed for transit operations funding.

It's unlikely in the current institutional environment that an income tax will become legal, as the State has not indicated any desire to implement one. VMT or emissions taxes have the potential of replacing motor fuel taxes in the next decade as vehicle efficiency continues to improve and VMT decline, but it's expected that the State would limit such funds to pay only for roads like the current motor fuel tax. In addition, it's not likely in 2014 that the State will give approval to King County to put an MVET to a public vote, but it's possible it could happen in 2015 with passage of a transportation package. Before this happens, the proposed State MVET bill could be revised to set the MVET at a higher rate or dedicate its revenue strictly to transit, so that in the event the bill is approved, the MVET can pay for some service growth.

5.2 Limitations and Generalizability

5.2.1 Data Sources

One of the main limitations of this study is the level and types of data used, particularly not having specific data for revenue options that haven't been formally proposed. While generalizing the amount of revenue that a particular option could generate is adequate for this study's purpose,

it would be much more informative to have specific values on how much revenue each option could generate under a specific scenario. For example, since Metro has not proposed a statewide income tax, it's impossible to say how it would be structured, how much of it could be directed to transit, and how it would affect existing taxes. Another example of where a greater level of detail in data could be useful is in understanding how a toll system could be designed to could benefit transit. Understanding which roads would be tolled and the level of revenue acceptable to the public and legislators would be helpful in understanding the feasibility of this option. Better predictions about each revenue source could be made with more detailed data.

Another limitation of this study is that the ability of revenue to grow was predicted under optimal economic conditions, and no predictions were made about how future economic conditions might change. No revenue source is immune to economic downturns, but they change in different ways. For example, Metro's experience with sales tax showed the level to which sales decline in an economic recession. As Tri-Met experienced during the same time period, payroll taxes also decline when employment declines and the same would be expected of an income tax. Taxes and fees applied to personal automobile use should be expected to decline over time as people purchase fewer cars and drive fewer miles every year. More insight could be gained into the value of different revenue sources using a comparison of different economic scenarios over time.

5.2.2 Methodology

The methodology used in this study involved simplification of the institutional environment in the State of Washington and King County. It's clear what actions are permitted under current laws, but it's unclear how these laws may or may not be changed in the future. Without knowing

exactly how the State legislature or local voters would act under different situations, any reference to future political changes is subjective. It's obviously easier to know what voters will support after a vote has already taken place. Otherwise, the future is unpredictable, but this study attempted to make the most realistic assumptions based on past behavior of legislators and voters.

5.2.3 Transferability

The findings of this study are likely to be similar in other transit agencies in Washington and other states in the U.S. As mentioned in Section 2.2.2, in the last few decades, states across the country have reduced the amount funding they've given to local transit agencies, and these agencies have been forced into finding new revenue sources. These agencies could benefit from discovering what revenue options might be available to them without going through with a public vote or attempting to change state laws, and that they potentially need to think beyond traditional sources. It would be helpful for agencies to know what measures will take a longer time to implement, so they can start attempting to change laws or put measures on a ballot sooner than later. In the meantime, they could pursue the immediately available revenue options while they pursue institutional change. However, the difference in laws in each state could limit the potential benefit of these findings.

6 Conclusion

This thesis determined that growing bus ridership in King County necessitates an increase in service, and this requires an increase in operations revenue. Various revenue sources exist but each varies in their ability to grow over time, their impact on equity, and their political feasibility in the current institutional environment of Washington State. The revenue options that would generate enough revenue to fund service growth and be equitable cannot be implemented without changes to State law. However, there are other revenue options that could be implemented in combination without changing laws that could help fund operations and potentially provide some level of service increase until Metro can obtain a long-term funding source. The institutional environment in the State of Washington makes it unlikely that changes will occur in the near term that would see substantial changes to income tax, property tax, or road tolls/congestion charges. This supports the pursuit of a countywide MVET that needs State authorization, but ignores the need to grow service and not simply maintain its current level. Simply filling a budget shortfall now will not help serve growing ridership in the future.

Identifying new transit revenue sources may prove to be an increasingly important topic for future research if transit agencies continue to face budget shortfalls at the same time service demands grow.

One potential avenue for further study would be a follow-up study a few years in the future in order to determine if Metro successfully chose a revenue option that allowed service to grow, why that option was chosen, how it was implemented, and if the findings of this study held true. It would be helpful for other transit agencies to understand both the before and after

circumstances of a revenue decision. Understanding the context of what options were available to Metro and then the eventual result would enable other agencies to determine if they've evaluated enough options and if they know the actual impacts of their revenue decisions. If Metro's revenue choices require a public vote, it would be useful to be able to look back and understand why the vote did or didn't pass. If a state law was changed or a proposal to change a law failed, transit agencies could understand what political steps were taken and what arguments were made and why they were or weren't successful, so that they could take similar or different steps to achieve their revenue goals.

Another interesting avenue for further study would be determining the effects of an increase of capital spending on operations revenue and costs. Many revenue sources are restricted/better-suited to capital projects or limited to road projects, which could be applied to bus systems. It would be helpful to know if obtaining capital funding and spending it on certain improvements for transit could result in measurable increases in farebox recovery or cost savings, and if so, what the different rates of return as are for different capital improvements. For example, if a bus agency could find funding for constructing exclusive bus lanes on some routes, it would be helpful to know how much Metro could expect to earn in additional fares from new boardings. Another example of where this could be helpful is determining how finding capital funds to replace a diesel bus with an electric trolley bus would affect operations spending on maintenance. If transit agencies are unable to find adequate revenue for operations, it would be helpful to know if capital revenue could help make up some of the difference, and if so, by how much. Agencies could then direct efforts to obtaining capital revenue for specific projects based on their effect on operations benefits and costs.

Future research could also be conducted on the impact of carshare/rideshare services on public transportation. Carsharing companies provide a membership service where people can rent a company's vehicles for short periods of time whenever they need them, without personally owning them. Ridesharing is a service provided by drivers who offer on-demand rides in their personal vehicles to others for a fee. Both of these transportation-sharing models have the potential to reduce the usage of transit because they can be more convenient. However, they are generally more expensive than transit and suffer from the same congestion issues like all vehicles. Transit could potentially lose mode share if fares increase too much or service frequency and reliability degrade too much, if transportation-sharing companies reduce prices, or if congestion declines. However, with fewer personal vehicles needed as a result of sharing, there would be less need for parking, and on-street parking areas could more easily be converted to exclusive transit lanes. It would be interesting to see if it's worthwhile for transit agencies to attempt to compete with transportation-sharing companies by lowering fares or installing exclusive transit lanes, or if the public thinks that transportation-sharing meets the same need of transit in a better way.

Future study could also be performed on how autonomous vehicles, or those that drive themselves, could impact transit. People with their own privately owned autonomous vehicle could choose this mode of travel over transit, because they could still be productive during their trip like they would be on transit, but have additional convenience and privacy in their own vehicle. There is the potential for autonomous vehicles also to be combined with transportation-sharing services, which could further increase convenience and reduce costs for these services. Autonomous technology could also be used to operate driverless transit, which could

substantially reduce labor costs but also impact jobs. There is a lot of potential for future study of how transit and carsharing/ridesharing and autonomous vehicles hurt or help transit.

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