

To: City of Bend Citywide Transportation Advisory Committee Funding Work Group
Attn: Susanna Julber and Eric King
From: Steve Porter and Michelle Porter, Residents of Bend
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Public Comment:

How Funding Needs & Transportation System Efficiency Respond to Funding Sources

Dear Bend Citywide Transportation Advisory Committee Funding Work Group:

You recently were provided a "Funding Sources Matrix" ("FSM") in which various existing and new potential funding sources are listed and summarily evaluated on grounds of legality, efficiency, equity, political acceptability, and magnitude of additional funding.

We believe that the FSM is materially incomplete in at least one crucial respect. Specifically, the FSM omits information regarding how certain funding mechanisms can *increase* funding needs, while others can *decrease* funding needs.

We address this topic and identify ***funding mechanisms that, by virtue of implementation, reduce the total amount of funding required to operate and maintain Bend's transportation system - making the transportation system more financially efficient and sustainable.***

SUMMARY

- Ideal funding mechanisms for Bend's transportation system should *directly* link payment for the transportation system with usage costs imposed upon the system. Such structure achieves the dual aims of: 1) avoiding inefficient taxation of beneficial activities; and 2) avoiding unwarranted subsidization of activities that impose higher costs upon the transportation system and hence increase funding requirements.
- ***If funding mechanisms are directly linked to transportation system usage and cost imposition, then the funding mechanisms will reduce funding requirements, making the transportation system more financially efficient and sustainable.***
- Congestion pricing/tolls, parking fees, and fuel taxes are the only funding mechanisms in the FSM that exhibit high levels of economic efficiency (i.e., they raise revenue and reduce funding needs). Only congestion pricing/tolls and parking fees have both significant "marginal cost" implications and "signaling value," however, so they are more efficient than fuel taxes.
- Case-study observation shows that congestion pricing/tolls and parking fees can be politically successful if areas that are responsible for generating the revenue receive a share of funds in proportion to their revenue generation. Hybridizing congestion pricing/tolls and parking fees with the organizing structure of Local Improvement Districts ("LIDs") achieves this aim.

INTRODUCTION

We address three topics in the following remarks.

First, we distinguish between two broad types of funding mechanisms included in the FSM - those which subsidize consumption of Bend's transportation system and thus *increase* overall funding needs; and those which tax consumption of Bend's transportation system and thereby *reduce* overall funding needs.

Second, we discuss the linkage through which higher transportation system consumption leads to greater transportation system costs. We then identify funding mechanisms that efficiently raise revenue and simultaneously reduce the lowest-value and costliest consumption of Bend's transportation system so as to close the funding gap through two complementary actions.

Third, we provide brief summary of how economically efficient funding mechanisms may be structured to gain political support.

TAXES & SUBSIDIES

It is a basic observation of economics (and common sense) that, if an authority wants to cause less of something to occur, a tax should be imposed on that activity; and, if the authority wants more of something to occur, a subsidy may be enacted.¹

Taxes, fees, and other charges levied upon a good, service, or activity decrease the quantity consumed of that good, service, or activity because imposition of a tax increases the cost of production and/or the cost of purchase.²

Subsidies, on the other hand, cause an increase in quantity consumed. A subsidy reduces the cost of production and/or cost of purchase and thus induces higher quantities of consumption than would have otherwise occurred.

Since taxes *reduce* targeted activities and subsidies *increase* targeted activities, taxation of things for which consumption is deemed undesirable or costly due to externalities, and subsidization of things for which consumption is deemed positive, may be sensible policy.

It is not sensible, however, to subsidize activities that are socially undesirable or costly to the tax authority. And it is particularly inefficient to tax desirable activities in order to subsidize undesirable ones. Unfortunately, this latter

¹ See, for example: Wessels, W. *Economics (Third Edition)*, Barron's (2000).

² For purposes of this general discussion, further distinction will not be made between taxes, user fees, or other external charges. Though their particulars may differ slightly, their generalized effects on economic activity are sufficiently similar as to group them together here.

condition describes Bend's current funding arrangement for its transportation system, and it describes many of the funding mechanisms included in the FSM.

Most importantly, certain funding mechanisms in the FSM are designed to subsidize the costliest use of Bend's transportation system and thereby give rise to ever-greater funding needs.

This effect is described below.

Taxes & Subsidies in Bend's Transportation System

With respect to funding and spending for Bend's transportation system, two general observations stand out:

- First, much of the funding for transportation system development and maintenance in Bend is not *directly* linked to activities that impose costs upon the system; rather, other activities are taxed, and at least some of those activities are desirable.
- Second, as a corollary, transportation system usage is subsidized - *with the heaviest users of the system receiving the largest net subsidies.*

As a consequence, the system is arranged: 1) to reduce the activities of things that do not directly impose costs upon the transportation system and may otherwise benefit the local economy (by taxing them); and 2) to incentivize greater usage of the transportation system and thus *cause higher funding needs* (by subsidizing such usage).

This provokes a vicious cycle of subsidies that give rise to disproportionately high use that instigates the need for ever-escalating subsidies. Such arrangement is extremely inefficient and unsustainable.³

This cycle can be broken, however: Taxes and fees used to pay for the transportation system can be *directly* linked to costs imposed upon the system by usage.

Under such an arrangement of directly linking tax/fee payment with cost generation, two beneficial outcomes result:

³ Such arrangement violates the "benefits principle" of efficient taxation/government spending. And its unsustainable nature can be observed in Bend's current shortfall of funds to maintain its existing transportation system. Unless payment and cost imposition are directly linked, this unsustainable funding shortfall will grow over time.

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- First, desirable activities (e.g., employment, business development, or property improvement) are not unduly taxed.⁴
 - Second, a subsidy that *increases* funding needs is reduced by, or replaced with, a funding mechanism that *decreases* funding needs by curtailing undesirable usage of the transportation system.⁵ (Transportation system usage that will first be curtailed is that which is of the lowest value and which generates the greatest system inefficiencies - it is thereby undesirable. This effect will be described shortly.)

Once it is recognized that the only economically efficient arrangement to generate funding for Bend's transportation system is by taxing activities that directly impose the costs that give rise to funding needs, two relevant questions emerge. First, what are the activities that impose costs on the transportation system? And second, are there funding mechanisms that can reside at this nexus?

⁴ The most obviously inefficient mechanism to single out in this vein is the payroll tax. Employment and earned wages benefit employees, employers, and the broader community; a tax upon employee wages reduces the propensity of businesses to hire staff and maintain staff levels across the business cycle, thus harming firms' economic output, employees' gains of employment, and the local economy's stability engendered by a robust labor market. Moreover, a payroll tax is regressive and imposes the most harms upon employees earning low wages. In part, this is because low-wage employees tend to be those considered "marginal" with respect to hiring and firing. From the business perspective, these employees' added contributions to business profit tend to be very close to their cost of employment, so even small payroll tax rate increases can discourage hiring of low-wage employees and induce headcount reductions, with most job losses concentrated at the lowest end of the wage spectrum. Property taxes, transportation utility fees, business fees, and certain sales taxes can have similar deleterious effects and exhibit high levels of general inefficiency.

It may be perceived that Transportation System Development Charges ("TSDCs") are directly linked to transportation system usage. But this is not so. TSDCs are based on estimated "trip generation," which translates anticipated future usage to a present lump-sum fee. Such fee does not adjust on the basis of actual user habits; rather, it can serve to induce more transportation system usage (see discussion on "sunk cost claiming") while simultaneously raising housing prices, reducing housing availability, and distorting development patterns. Restrictions on usage further distance TSDCs from linkage between use and payment.

⁵ With respect to subsidies, it should be recognized that any funding directed toward Bend's transportation system largely serves to subsidize driving. While it is true that Bend's transportation system provides connectivity and access for pedestrians, cyclists, and other users, the overwhelming majority of the capital stock of transportation assets in Bend's system serves motorists, and the lion's share of depreciation costs are linked to vehicle travel. At present, motorists receive generous subsidies since very little funding for Bend's transportation system is directly linked to driving.

Usage & Costs in Bend's Transportation System

Bend's transportation system costs are a partial function of vehicle miles traveled ("VMTs") since road depreciation and hence road maintenance expenses depend upon total VMTs.⁶ Moreover, growth in system VMTs often give rise to perceptions of system congestion that then lead to calls for costly road expansion or network enlargement.

Focus here will accordingly be placed upon VMTs, first in the evaluation of factors that influence VMTs and then in the identification of funding mechanisms that can modulate VMT activity while also generating revenue.

The quantity of VMTs in Bend's transportation system depends upon a number of variables, but one influential variable is the "generalized marginal cost" of travel (i.e., total cost per VMT incurred by a motorist). All else equal, if the cost per VMT increases, total VMTs will decline; if cost per VMT falls, then VMTs will rise. Generalized costs of travel encompass: 1) travel time; 2) operating costs (e.g., fuel consumption, vehicle depreciation, etc.); 3) usage costs (e.g., road tolls); and 4) storage costs (e.g., vehicle parking or storage fees). An increase in any of these components of cost raises the hurdle for vehicle travel and causes users to utilize the system more efficiently and/or shift from vehicle travel to other modes that impose lower depreciation costs on the system.

The reason "marginal" costs are important is as follows. "Marginal" relates to incremental driving trips and/or incremental miles driven in a trip. Marginal costs are key because: 1) they provide users direct information about the costs of using the system, and better information enhances the likelihood of efficient usage (i.e., they have "signaling value"); and 2) they guide decision-making "at the margin" such that the least valuable trips or miles are culled from the system, leaving valuable trips and miles in the system - which makes system utilization more efficient with respect to economic value generation.⁷

⁶ Vehicle weight is an important factor in cost imposition, and it may be noted here that average vehicle weight in the U.S. is somewhat above 4,000 pounds. Cyclists and pedestrians tend to register weights in the range of 5% or less of vehicle weight. On this basis, it would be expected that the average vehicle imposes per-mile costs of about 20 times that of the average cyclist or pedestrian. In fact, empirical evidence suggests the ratio is about 27:1 for cycling and 133:1 for walking. Discussion here will accordingly focus on vehicle miles traveled since cyclist and pedestrian travel imposes such small costs relative to vehicles. For more detail, see: Porter, "Public Comment: Evidence Demonstrating the Efficiency, Safety, and Economic Benefits of 20mph Speed Limits" (July 13, 2018). Other cost factors include total lane-miles, the beginning condition of roads (i.e., the quality index value), weather-related wear, usage rates of studded snow tires, and labor and materials costs for repairs.

⁷ Marginal fees must be distinguished from up-front fees like vehicle registration fees. Up-front fees do not have a mitigating effect on incremental VMTs; instead, once paid, up-front fees can induce *greater* system usage as a symptom of "sunk cost claiming" or people's attempt to "get their money's worth." This happens as drivers increase VMTs to amortize up-front cost across more miles, thus reducing per-mile cost. Up-front fees can thus have a perverse effect; as opposed to culling low-value trips from the system, they can *add* low-value trips. Accordingly, registration fees apply to "marginal" vehicle *ownership* - i.e., they add to the capital cost of a car and so can discourage marginal car purchases rather than usage. It is unlikely any politically palatable registration fee could be large enough to materially affect ownership rates; however, if applied in conjunction with taxes that add marginal VMT costs, vehicle-related up-front fees could have beneficial impacts on the types of vehicle owned, particularly if fees were linked to vehicle size or weight - factors that magnify maintenance costs per VMT.

By imposing marginal VMT costs upon users, VMTs will fall relative to baseline, the economic value of VMTs remaining in the system will be higher, and funding required for the system will decrease.

Funding mechanisms included in the FSM that impose marginal costs include: 1) congestion pricing/tolls; 2) parking fees (if administered through metering rather than up-front parking permit fee); and 3) fuel tax.

Congestion pricing/tolls add marginal VMT costs by charging users for passage on roads on a distance basis. Parking fees add marginal trip costs by charging users for vehicle storage during the trip. Both discourage low-value vehicle travel by providing clear signaling about how much out-of-pocket cost will be incurred to conduct the incremental driving trip or drive the incremental mile. In this way, both reduce transportation system depreciation and maintenance needs. *Thus, they raise funding for the system and simultaneously reduce funding needs, closing the funding gap through complementary actions.*

A fuel tax also adds marginal usage costs and can reduce funding needs; however, a fuel tax's signaling value is weaker than those of tolls and parking fees since the observable linkage between incremental cost and marginal mile/trip is less explicit to the user. Consider: If a \$0.05 per gallon gas tax is enacted, what is the incremental charge associated with a 1.6-mile trip, given a blended fuel economy rate of 22mpg...? The calculations are complex enough to obscure the linkage between use and cost.

Accordingly, while the fuel tax does offer some economic efficiency, it does not meet the same standard of efficiency as congestion pricing/tolls and parking fees do.

POLITICAL SUCCESS

There appears to be broad-based perception that “free” roadways and “free” parking are somehow exempted from the normal operations of free markets under which the price paid for something depends, at least in part, upon its costs of provision. People may perceive that imposition of tolls and parking fees take something from them without “just” compensation. Here, we provide a proposal both to counteract this native resistance to tolls and parking fees and to activate natural political constituencies to support them.⁸

Linking Revenue Generation with Spending

By structuring fund allocation/spending in accordance with fund generation on a localized geographic basis, natural constituencies supporting the fees will emerge. For instance, if parking fees paid by non-residents for parking in a given neighborhood are shared with the neighborhood for localized infrastructure improvements, that neighborhood will support imposition of the fees.

⁸ Many of the ideas and examples described in this section derive either wholly or in large part from: Shoup, D. *The High Cost of Free Parking*, American Planning Association Planners Press (2011). This book is a 750-page treatise on the economics of parking and, though lengthy and somewhat technical in parts, is highly recommended as a resource for the Funding Work Group.

Oftentimes, imposition of a targeted tax places costs upon a small number of people, who naturally oppose the tax. Beneficiaries of the tax, however, are widespread since tax proceeds may funnel into the general fund with no particular earmarking for allocation. In this way, the “gain” per beneficiary is vastly less than the “cost” per payer. A minority of payers thus may vocally oppose the new measure, while prospective beneficiaries, who stand to gain relatively little each, do not have sufficient individual incentive to strongly support the measure.

This problematic combination of concentrated distaste for targeted taxation and diffuse support for beneficial spending can be overcome as follows. Regarding parking fees, some proportion of revenue generated by parking fees in any given local geography can be spent to enhance infrastructure (and thus property values) in that specific geography. For instance, a given percentage of parking fees raised from parking in, say, a neighborhood could be earmarked specifically for use in that neighborhood.⁹ Fees could be readily structured to not be imposed on residents of the neighborhood, and so the residents - who would stand to identifiably benefit from the new fees but would not pay those new fees - would become natural advocates for the policy. If arranged well, such advocacy would overcome any (relatively diffuse) opposition on a district-by-district citywide basis.¹⁰

The same logic can be applied to congestion pricing/tolls. Heavily-trafficked roads that are candidates for tolling are located in areas that currently suffer due to road noise, pollution, and safety loss. Neighborhoods through which these roads travel could receive a fixed proportion of localized toll revenue for infrastructure use to help offset these negative externalized costs of vehicle travel, while low-value traffic counts would be culled.

Notably, the gasoline tax does not provide the same opportunity for highly localized use/spend structuring as parking fees and tolls since the location of gas purchase discloses little about where the gas actually is consumed and hence where costs of VMTs are most suffered. Thus, a gas tax directly costs motorists but does not readily benefit any targeted group that can become a natural constituency. (It is likely due, at least in part, to this reason that the gas tax previously failed at the ballot.)

Regarding parking fees and congestion pricing/tolls, the essential generation-spending logic is the same as that found in Local Improvement Districts. Except, crucially, LIDs tend not to contribute anything outside their localized areas. With proportional division of proceeds between local areas and general fund, the parking and congestion

⁹ Similar arrangements could be instituted in commercial districts.

¹⁰ It has been shown that curbside parking spaces in some neighborhoods can generate revenue that exceeds property taxes paid by the properties they front. Consider: If a curbside parking space earns just \$5 net daily revenue per year, that is \$1,780. Most residential properties have street frontage sufficient for two or three curbside parking spaces. Resulting revenue per residential property would accordingly range from \$3,560 to \$5,340 annually. If only 5% of Bend's approximately 40,800 homes (i.e., 2,040 properties) generated \$3,650, that would sum to nearly \$7.5 million in net revenue each year. Given Bend's many attractions in different parts of town and its destination status for tourists, such calculation likely understates revenue potential. Moreover, this example does not count currently unmetered commercial district curbside parking.

fee revenue can garner political support and provide for system-wide needs simultaneously - all while diminishing overall funding needs by discouraging low-value vehicle travel.

Examples of Successful Implementation

This sort of arrangement has been successfully deployed in Pasadena, California, where Old Town Pasadena imposed parking fees and used 100% of proceeds to enhance and redevelop the Old Town area. Now, Old Town Pasadena is no longer a seedy repository for pawn shops and pornography; rather, it is a premier retail and residential area in Southern California. San Diego enacted a division of parking fee revenue between districts in which revenue is generated and the general fund. These areas have experienced similar enhancements.

Eugene, Oregon, successfully established an Event Parking District related to the university's basketball arena.

London (along with many other cities) successfully implemented congestion pricing/tolls, with London's proceeds from city-center tolls exclusively benefiting the city center. Parking fees in London similarly benefit the neighborhoods in which the fees are generated.

In all cases, transportation system efficiency increased, revenue increased, undesirable rates of excess driving diminished, and the overall quality of the place (not just its transportation system) was improved.

Congestion Pricing/Tolls and Parking Fees Paid by Tourists

Congestion pricing/tolls and parking fees apply to tourists, and arrangements can be made to give preferential pricing to residents in order to shift additional tax burden to non-residents. This can bolster political support.

Regarding parking fees, "smart cards" for parking meters¹¹ can be offered for purchase in which a minimum allowance load is required and, if met, provides a "bulk discount" to the buyer.¹² Such arrangement would be valuable to residents but unattractive to non-residents because the latter would unlikely incur sufficient parking fees during a short stay in town to benefit from the bulk discount. Transportation system funding thus shifts to tourists, and it does so in a non-discriminatory way. Indeed, terms of purchase are offered to all; residents and non-residents simply self-sort into pricing tiers in predictable ways. Similar structure can be installed for congestion pricing/tolls. This approach has the added benefit of allowing the City to obtain payment before providing service, so as to benefit from "float" - that is, additional revenue can be generated from interest earned.

¹¹ Parking meter purchase can be done such that the authority purchasing the meters does not pay cash out-of-pocket for the units. Instead, the seller can "finance" the purchase by collecting the parking revenue until such time as the meters are paid off, at which point revenue redirects to the authority.

¹² Smart cards can allow parking meters to charge by the minute, improving parking space turnover relative to meters that charge in 15-minute increments. Also, smart cards act like debit cards, so users can "feel" the cost of parking on a marginal basis. They accordingly circumvent problems associated with sunk cost claiming.

CONCLUSIONS


The following conclusions can be drawn:

1. Congestion pricing/tolls and parking fees provide the highest levels of economic efficiency for transportation system funding because they simultaneously raise revenue for the system and decrease costs associated with transportation system development and maintenance.
2. Fuel taxes are somewhat less efficient than congestion pricing/tolls and parking fees but are nonetheless more efficient than other funding mechanisms.
3. Congestion pricing/tolls and parking fees can be politically successful if revenue generation and a share of spending are linked on a localized geographic basis. This helps build natural political constituencies to support the measures.
4. Congestion pricing/tolls and parking fees can be paid by tourists at levels greater than those paid by residents if simple, non-discriminatory arrangements are made in their implementation.
5. Other funding mechanisms included in the FSM subsidize transportation system usage, which perpetually increases funding needs and reduces transportation system efficiency.

Thank you for your consideration.



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ABOUT THE AUTHORS

Steve Porter

Steve is a recognized authority on economic analysis and valuation. He has provided expert testimony in high-stakes commercial litigation on topics including economics, valuation, statistics, econometrics, market definition, consumer choice, business strategy, and pricing, among others. He has consulted with Fortune 500 corporations on intellectual property licensing, asset transactions, and valuation issues, and he has conducted economic impact analyses, including work performed on behalf of the Los Angeles Superior Court. His articles have been published in the *Journal of Legal Economics*, *les Nouvelles*, the *Patent, Trademark & Copyright Journal*, the *Journal of the Patent and Trademark Office Society*, and *Intellectual Asset Management*, among others. He also is co-author of *IP Strategy, Valuation, and Damages* (LexisNexis), a treatise on intellectual property economics. Steve has been an invited speaker before the Chicago Bar Association, the Attorney General's Office of the State of Arizona, and various law firms and corporations, where he has lectured on topics ranging from economic analysis and valuation to econometrics and game theory, and he has been quoted by and featured in the editorials section of the *Wall Street Journal*. Steve is a recipient of the William J. McKinstry Award in economics, the *Wall Street Journal* Scholar Award, the Micronomics Economic Research Award, and the IE Fund Leadership Scholar Award. He has served as a teaching assistant in economics at the Dolibois European Center in Luxembourg, an ad hoc referee for the *Journal of Forensic Economics*, and as Co-Chair and an Executive Committee Member of Young Professionals Advisory Council at the Farmer School of Business. Steve graduated *summa cum laude* and with University Honors from Miami University in Oxford, Ohio, completing dual majors in economics and marketing. He was granted his MBA, with honors by the Dean and Board of Academic Affairs, from IE Business School in Madrid, Spain, graduating 5th in a class of more than 400. Steve holds the Series 65 securities license.

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Michelle is an expert in valuation, economic analysis, and quantitative methods. She has been engaged by Fortune 500 companies, SMEs, U.S. and international government entities, and leading law firms to provide expertise in high-stakes commercial litigations, negotiations, and asset transactions. Her consulting work has encompassed advisory roles in industries including pharmaceuticals, medical devices, banking, telecommunications, consumer goods, software, and transportation technologies, among many others. Michelle is co-author of the book entitled *IP Strategy, Valuation, and Damages* (LexisNexis). Her articles have appeared in *les Nouvelles*, *Intellectual Asset Management*, *Intellectual Property Magazine*, *Smart Business*, *Los Angeles Daily Journal*, *The Recorder*, and *China Intellectual Property*, and she has been quoted by *Forbes*. Michelle has spoken before such groups as the Intellectual Property Law Committee of the Chicago Bar Association, Google, and Motorola Mobility. Her work has been recognized with the Accenture International Consulting Competition Top Honors Award, the IE Women Leaders Scholarship Award, the *les Nouvelles* Best Article Award, and the Micronomics Economic Research Award. In addition, Michelle has served as an advisor to the Forte Foundation's MBALaunch for Women, President of the IE Business School Southern California Alumni Association, Co-Chair and Executive Committee Member of Young Professionals Advisory Council at the Farmer School of Business, and an instructor in microeconomics. Michelle graduated *cum laude* from Miami University in Oxford, Ohio, majoring in economics. She received her MBA from IE Business School in Madrid, Spain.