January 12, 2015

TO: Members of the Senate and House Transportation Committees

SUBJECT: Joint Transportation Committee Activity Update

In the 2014 Supplemental Transportation Budget (ESSB 6001), the Legislature directed the Joint Transportation Committee (JTC) to undertake three studies. One study included an appropriation of $250,000 to hire consultants. The other two are staff studies, with staff from the JTC and the House and the Senate Transportation Committees conducting the study within existing resources, and with significant assistance from state agency personnel and others.

Attached are updated summaries of the three 2014 studies:

- Business models for financially sustainable electric vehicle charging networks (p. 3)
- Vehicle titling and registration processes, and opportunities for improvements (p. 6)
- Driver education: online pilot project, and improved safety for novice drivers (p. 8)

A fourth 2014 project is the biennial update of the Transportation Resource Manual, a compendium of facts and data about Washington's statewide transportation system. The biennial update is timed to be available at the beginning of each long session, the session in which the biennial transportation budget is written. It is also intended to be a resource to both veteran and new legislators and staff engaged in transportation issues in the Legislature and the Executive Branch.

In addition to meetings associated with specific studies, the JTC met seven times so far this interim:

- May 14th in DuPont
- June 17th in Spokane, in conjunction with the Association of Washington Cities Annual Conference
- July 24th in Renton
- September 18th in Yakima
- October 16th in Tacoma
- December 11th in Olympia
- January 7th in Olympia

The JTC also organized a freight-focused tour in Spokane and SE Washington on June 18 and 19, where legislators and staff, as well as WSDOT and local officials, visited key interchanges, grade separation projects, the North Spokane Corridor, Spokane Transit projects, the McCoy Shuttle Elevator, Palouse and Coulee City Railroad projects, the McGregor Company, and the Ritzville Warehouse Grain Shuttle, among other sites. In September, we took a half-day tour of projects in the Yakima area, including grade separations, the Cascade

Mill Property, economic vitality and safety projects, and a tribal transit project. We also toured the Allan Brothers Fruit plant, to discuss freight movement issues.

Thanks to the thirty-three members of the House and Senate who have participated in one or more JTC meetings and tours this interim. Your participation is invaluable, and contributes to the richness of discussion and the thoroughness of our work.

The JTC website provides links to all current and past studies, including meeting presentations and reports. http://www.leg.wa.gov/JTC/Meetings/Pages/default.aspx.

If you have any questions, please contact the JTC staff:

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A final note: Gene Baxstrom, who joined the JTC staff on a part-time basis in 2005 after having retired from the Legislature in 2004, retired from the JTC on October 1, 2014. Gene was integral to getting the JTC up and running after its authorizing legislation was adopted in 2005. He lead 15 studies during his tenure at JTC, and participated in many more. His contributions to the JTC, the Legislature, transportation policy, and to his fellow staffers are too many to count, and too valuable to ignore. JTC is a better agency today because of Gene.

Senator Curtis King
Co-Chair

Representative Judy Clibborn
Co-Chair

Senator Tracey Eide

Representative Ed Orcutt

Senator Steve Hobbs

Enclosures: JTC Studies

Update on 2014 Joint Transportation Committee Studies

January 12, 2015

Business Models for Financially Sustainable EV Charging Networks

The Legislature charged the Joint Transportation Committee with exploring business models for financially sustainable electric vehicle (EV) charging networks, with the goal of fostering private sector commercialization of EV charging services.

In January, 2014, Governor Inslee proposed spending $5 million in non-gas tax transportation funds to expand the state's EV charging network. The funds would have been used to install 26 DC fast charging stations along I-5 and I-90 and other routes; and to provide employer incentives to install charging stations.

The Legislature did not fund the Governor's request, and instead funded this study to investigate how to incent the private sector to build the EV charging network; to identify business models for financially sustainable charging networks; and to identify roles for the private and public sectors in those business models.

The JTC study

JTC hired the Center for Climate and Energy Solutions (C2ES) from Arlington, Virginia to conduct the study. A 17-member Advisory Panel provided valuable input; it was composed of legislators and stakeholders from state and local government, investor-owned and public utilities, and both national and local EV experts.

The study got underway on May 14, 2014. The Advisory Panel met five times, including an introductory webinar on June 30; a day-long meeting in Olympia on July 31; a September 16 webinar focusing on opportunities and challenges for utility investment in charging networks; and in-person meetings on October 1 and November 13. An interim report was presented to the JTC on December 11, 2014, and a final report is due on March 1, 2015.

EV charging in Washington

As of June, 2014, there were 8,148 EVs in Washington, over half of which are located in King County, with sizable numbers in Snohomish, Pierce, Clark, Thurston, Spokane, Whatcom and Benton counties. There are two main types of EVs: Battery-Electric Vehicles (BEVs) which operate solely on battery power; and Plug-in Hybrid Electric Vehicles (PHEVs) which operate with battery power and gasoline engines. Contrary to the trend elsewhere in the country, BEVs outsell PHEVs by a large margin in Washington (69% vs. 31%). This fact is important in evaluating the status of and need for charging stations across the state. Currently, most EV travel is local or commute-based, although EV travel is possible from Seattle to Bellingham and Portland.

Washington currently has more than 440 EV charging locations. These include more than 400 Level 2 charging locations, where a Nissan LEAF, for example, can charge in 3.5 – 7 hours. Level 2 chargers, which cost about $2,000, are typically found in people's garages and outside businesses where people will spend a few hours. Washington also has more than 40 DC fast charging locations, where a Nissan LEAF can charge to 80% capacity in 30 minutes. DC fast chargers can cost in excess of $100,000 due to high power installation and equipment costs.

Business models for financially-sustainable EV charging networks

Thus far the study has found that charging networks generally can't make a profit solely by selling electricity to EV drivers. According to estimates developed by C2ES, the costs to build and operate a network exceed fee revenue over the network's 10 year lifetime. Construction of the current network of charging stations was subsidized by the federal government, but that subsidy is not expected to be available in the future.

Three business models were developed and analyzed for financial feasibility along three routes in the state. In the initial analysis, only private funds were used to fund the business model.

- Business Model 1 assumes a large business (e.g. automaker, battery supplier, utility) provides up front capital to the owner-operator of the charging network to subsidize equipment costs.
- Business Model 2 assumes a group of local businesses provides an annual revenue stream to the owner-operator, paid from revenue generated by new EV tourists.
- Business Model 3 is a combination of 1 & 2, and assumes both an upfront subsidy and an annual revenue stream are provided to the owner-operator.

Business Model 1 was tested on I-90 between Seattle and Spokane. Six new DC fast charge stations are needed along that route to enable a BEV (such as a Nissan LEAF) to travel along that route. The financial analysis showed that even with a $42,000 subsidy from an automaker, the owner-operator of the 6-station network lost money over the 10 year lifetime of the network. But the automaker made money, through increased EV sales stimulated by the existence of the charging network.

Business Model 2 was tested on a tourist destination – Ocean Shores, via Seattle, Olympia and Longview. To enable BEV travel on this route, 3 DC fast charge stations and 25 Level 2 stations are needed along the route to and in Ocean Shores. Six Ocean Shores businesses would host the charging stations, and pay the owner-operator of the charging network 10% of the additional revenue generated by new EV tourists. The financial analysis showed that the annual revenue share of $28,000 - $84,000 paid over 10 years made the business model profitable for the owner-operator and the local businesses. However, the owner-operator achieved payback in 9 years, which is significantly longer than the 5 years many investors look for in an investment vehicle.

Business Model 3 was tested on another tourist destination – The Tri Cities and Walla Walla, via Seattle and Spokane. The new charging network requires at least 10 DC fast charge stations and 50 Level 2 stations. The owner-operator receives a $95,000 upfront subsidy as well as 10% revenue sharing from ten local wineries which would host the charging stations. The financial analysis showed that the business model was profitable, but the owner-operator's payback took 9 years, more than the 5 year target.

Conclusion: The three business models show promise and draw new contributions from the private sector, but are not profitable enough to attract private investors without public subsidy, at least in the short term.

Effect of public sector interventions on business model sustainability

The consultants tested several public sector interventions to help make the three business models profitable. They tested a combination of interventions to illustrate the type of public sector contributions that could make the business models financially sustainable, and allow the owner-operator to achieve payback within 5 years.

The public sector interventions included financial and policy interventions that directly affect financial performance, and others that increase EV sales (and therefore charging station utilization) and lower upfront capital costs. These include the following:

- Low-interest loans and grants
- Extending the BEV sales tax exemption set to expire on June 30, 2015
- Consumer education
- Changing building codes to require new construction and major renovations to provide EV-ready infrastructure
- Implement the California Zero-Emission Vehicle (ZEV) program
- Share public-sector charging stations with the private sector

The analysis showed that for the six-station network on I-90 between Seattle and Spokane, Business Model 1 was profitable and the owner-operator achieved payback in 5 years when three public sector interventions were added to the $42,000 automaker contribution. Those public sector interventions included low interest loans ($110,000 at 5.4%), one-time grants ($220,000) and extending the BEV sales tax exemption.

For the charging network to and within Ocean Shores, Business Model 2 achieved profitability and the owner-operator achieved payback in 5 years when three public sector interventions were added to the 10% revenue share from local businesses. Those public sector interventions included low-interest loans ($150,000 at 5.4%), one-time grants ($85,000) and extending the BEV sales tax exemption.

The same was true for the charging network to and within the Tri Cities and Walla Walla. Low-interest loans ($415,000 at 5.4%) and grants ($240,000), plus the sales tax exemption – in addition to the automaker and wineries' contributions – made Business Model 3 profitable and the owner-operator achieved payback in 6 years.

Public subsidies may not be needed after 5 years. A key study finding was that public subsidies may no longer be needed after 5 years, for similar new projects, because the public sector interventions would have helped the EV market to grow to the point where utilization increases provided enough additional charging revenue to offset the need for public subsidies.

The public sector interventions would be needed for the first five years, both to make the business models profitable, and to help grow the EV market. But after five years, if the market has grown sufficiently and costs of equipment drop due to economies of scale, the business models may be sustainable without public sector assistance.

Study materials are available at
http://www.leg.wa.gov/JTC/Pages/ElectricVehicleChargingStationNetworksStudy.aspx

Study origin:	2014 Transportation Budget, ESSB 6001, Sec 204(6)
Report:	Interim report due December 31, 2014; final report due March 1, 2015.
Appropriation:	$250,000 (contract signed for $190,000)
Project Manager:	Mary Fleckenstein (360) 786-7312; Beth Redfield (360) 786-7327 as back-up
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Vehicle Titling and Registration Processes, and Opportunities for Improvements

The 2014 Legislature directed the JTC to review current vehicle titling and registration processes, and to develop recommendations to streamline processes, modernize policies and identify information technology opportunities. A stakeholder Work Group was appointed to assist in the study; it included County Auditors, vehicle licensing Subagents, and DOL personnel.

The Department of Licensing (DOL) contracts with County Auditors to administer motor vehicle titling and registrations. In 31 of the state's 39 counties, 141 private sector Subagents are appointed to help carry out these duties. Approximately 8 million motor vehicle title and license transactions occur annually in Washington.

This study grew out of concerns about current titling and registration processes, including the volume and handling of paper documents, physical document transmittal, paper records retention requirements, antiquated processes, and what some believe to be the dual regulation of Subagents by Auditors and DOL. Other issues concerned DOL, Auditor and Subagent readiness to address future trends in information and licensing processes, the potential implementation of alternative transportation taxation, and opportunities to merge vehicle licensing and taxation.

The JTC study

The study was conducted by JTC staff and staff from the House and Senate Transportation Committees and OFM, in conjunction with the stakeholder Work Group.

From April through June, staff met with DOL to explore the contractual and business processes involved in vehicle licensing, and to better understand their Business and Technology Modernization Initiative (BTM). The BTM initiative is a multi-year, multi-million dollar effort to modernize DOL systems, including the outdated Vehicle Field System used to conduct vehicle titling and registration transactions. Staff also conducted site visits to County Auditor offices to better understand the day-to-day issues faced by licensing agents, and their approach to and concerns with their licensing duties.

In July, staff interviewed each stakeholder group to solicit their concerns and suggestions. On August 18, 2014, Work Group members and staff met in Olympia to discuss issues identified by each stakeholder group to streamline processes and policies, improve training and information flow, and potential technological opportunities, and to identify potential recommendations.

Staff presented a study update at the July 24th JTC meeting in Renton; and the following observations and recommendations at the September 18th JTC meeting in Yakima.

Observations and Recommendations

Observations from stakeholder interviews and discussions included the following:

- widespread frustration with the antiquated and inflexible technology of DOL's Vehicle Field System (frustration shared by Auditors, Subagents and DOL);
- the volumes of paper work required in current licensing processes, and the resulting paper management, physical retention, staffing and cost-related issues;
- the need for improved training for Auditor, Subagent and DOL staff; and
- the unique differences among counties, suggesting a *"one size fits all"* approach may not be appropriate to address every county's situation.

There was widespread optimism regarding DOL's recent collaborative efforts to improve licensing processes and staff training, and the potential for BTM to modernize processes, reduce paper handling requirements, and provide other efficiency improvements.

Study recommendations are described below.

Streamline licensing processes. These recommendations require DOL to work with Auditors and Subagents to:

1. Convene a Lean event or other process improvement to reduce paperwork requirements.
2. Explore ways to reduce mailing costs, including alternative means or carriers to transmit documents.
3. Explore more efficient inventory delivery from DOL to Auditors and Subagents.

Improve training and communication

4. Improve DOL staff training to ensure the Vehicle and Vessel Operations support group provides consistent and timely answers, and consistent training is provided to Auditors and Subagents.
5. Smaller counties would benefit from more frequent training opportunities.
6. Auditors should periodically visit Subagents, and DOL should periodically visit Auditors and Subagents.
7. DOL should increase face-to-face interactions with Auditors and Subagents.
8. DOL should provide consistent fraud detection training for Auditors and Subagents, and utilize them to identify potential fraud issues.

Improve processes

9. Auditors should work with Subagents and DOL to develop guidelines for Auditor supervision of Subagents.
10. Auditors, Subagents and DOL should meet at least annually for training, and to discuss opportunities for process improvements.
11. Consider efficiency opportunities associated with elimination of periodic plate replacement.
12. DOL should improve response times for calls to the Vehicle and Vessel Operations support group, and consider alternative means of communication such as Live Chat or Instant Messaging.
13. DOL will research issues regarding signature requirements for title work.

Technology modernization

14. DOL should consider distributing a BTM newsletter to Auditors and Subagents to keep them informed of design, implementation and training opportunities.
15. BTM may address current issues regarding the need for a dedicated terminal data line for titling and registration work, and provide opportunities for significant reductions in paper transactions

A number of suggestions were considered but not recommended by the Work Group, including evaluating the use of bar code technology to replace vehicle tabs, collect tolls, measure VMT, and other tasks; requiring title work to be conducted either by the public sector or the private sector but not both; removing Auditors from Subagent supervision; eliminating the requirement for Auditors to audit Subagents; allowing auto dealers to do their own vehicle title work; and making all titles "quick titles".

The final report was approved by the JTC on December 11, 2014. Study materials can be found at http://www.leg.wa.gov/JTC/Pages/TitlingRegProcessStudy.aspx

Study origin:	2014 Transportation Budget, ESSB 6001, Sec. 204(7)
Report:	Accepted December 11, 2014
Appropriation:	Within existing funds
Project Manager:	Gene Baxstrom (360) 786-7398, with Mary Fleckenstein (360) 786-7312, back-up
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Driver education: online pilot project, and improved safety for novice drivers

The Legislature directed the JTC to coordinate a Work Group to:

- develop parameters for and make recommendations regarding a pilot program that would allow students to meet traffic safety education requirements online, and
- make recommendations related to requiring driver training for individuals between the ages of eighteen and twenty-four who have not previously passed a driver training education program, or other methods of enhancing the safety of this high-risk group.

A final report was accepted by the Joint Transportation Committee at its December 11, 2014, meeting.

Background

Currently in Washington, persons under 18 years of age applying for a driver's license must complete a driver education course offered by a school district or licensed commercial driver training school. Courses must include at least 30 hours of classroom training and at least 6 hours of behind-the-wheel instruction. A survey of other states found 16 states approve online courses as an alternative to traditional classroom driver education.

In contrast, novice drivers 18 years and older must pass only the knowledge and skills examinations to receive an unrestricted driver's license. A number of other states have requirements for novice drivers over 18 years of age, including an instructional permit during a training period, a relatively short driver education course (classroom or online) for license eligibility, and application of graduated driver license restrictions for the initial period of licensure.

Data from Washington State's 2013 Strategic Highway Safety Plan, also known as Target Zero, shows that young drivers (ages 16 to 25) made up 14% of Washington's licensed drivers, but were involved in crashes leading to 35% of traffic fatalities and 38% of serious injuries.

The JTC study

The study was conducted by JTC staff with assistance from staff of the House and Senate Transportation Committees, the legislative caucuses, Department of Licensing (DOL), Traffic Safety Commission, and Office of Financial Management.

The stakeholder Work Group appointed to assist in the study includes Senators Liias and Rolfes, Representatives Hayes and Ryu, and representatives of commercial driving schools, public school driver education programs, DOL, Traffic Safety Commission, Washington State Patrol, Superintendent of Public Instruction, AAA, and Farmers Insurance.

The study began with a survey of Work Group members to establish a preliminary framework for evaluating online driver education and other safety initiatives for young novice drivers. This information was presented to the JTC at its May meeting in DuPont.

The Work Group met twice to view presentations on background information and to discuss pilot project parameters. At these meetings, briefings were provided on current requirements for getting a driver's license, young driver safety statistics, DOL efforts to update the driver education curriculum, and survey results of other states' initiatives. Participants also viewed live demonstrations of two online driver education programs. To supplement information presented to the Work Group, JTC staff also conducted a literature review of research on what is known about the links between driver education and safety outcomes.

Findings and Work Group Preferences

Findings of the study include the following:

- The youngest drivers have the highest crash rates, but there are safety gains to be made for all young drivers up to 24 years of age.
- The quality of an online course can be regulated by course criteria or performance outcomes.
- A blend of classroom and online learning offers opportunities to improve educational outcomes.
- Driver education, as a stand-alone policy, has not been proven to reduce collisions. As part of a multi-pronged safety approach, however, getting more of the youngest drivers in traffic safety education also sets them on the Intermediate Driver License pathway to licensure, which has been shown to reduce collisions for 15 to 17 year olds.
- Washington's current knowledge and skills tests may be too easy, and may need to be strengthened.
- Affordability of driver education courses is most effectively increased by subsidy programs.

Work Group preferences for pilot project parameters included the following:

18-24 year olds

- The Work Group believed that safety gains were paramount for older novice drivers, as this population has not been targeted by safety initiatives.
- The state should adopt a requirement that novice drivers between 18 and 24 take a short online driver education program, including behind-the-wheel hours.
- This should be a permanent program not a temporary pilot**.**

15-17 year olds

- For 15 to 17 year olds, the Work Group was divided on the adoption of online driver education. They preferred instead delaying implementation of online education for this age group, in part to apply lessons learned from an online driver education requirement for the older age group.
- If the Legislature chooses to offer online driver education to 15 to 17 year olds, the Work Group generally agreed on certain elements: a goal of increased accessibility and affordability, no worsening of safety outcomes, supplementing/blending the existing classroom course with online materials, retaining teacher involvement, and no change to the behind-the-wheel requirement.

Study materials can be found at http://www.leg.wa.gov/JTC/Pages/On-lineDriversEducation.aspx

Study origin:	2014 Transportation Budget, ESSB 6001, Sec. 204(8)
Report:	Accepted December 11, 2014
Appropriation:	Within existing funds
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