

## August 2014 Public Communications Summary

9/23/14

The following is a summary of feedback received by Puget Sound Energy (PSE) between Aug. 1 and Aug. 31, 2014 regarding the Energize Eastside project. During this period the project received 47 communications from the public. The communications were submitted via the project email address, the project voicemail, or the project website. Communications address a range of topics and often discuss more than one topic and/or segment; therefore, many communications are categorized and discussed under multiple topics.

### Feedback Frequency by Topic

The following table indicates the frequency with which various topics were discussed (total) and where a specific segment(s) was mentioned when discussing this topic\*. In August 2014, only two comments mentioned specific segments or route options.

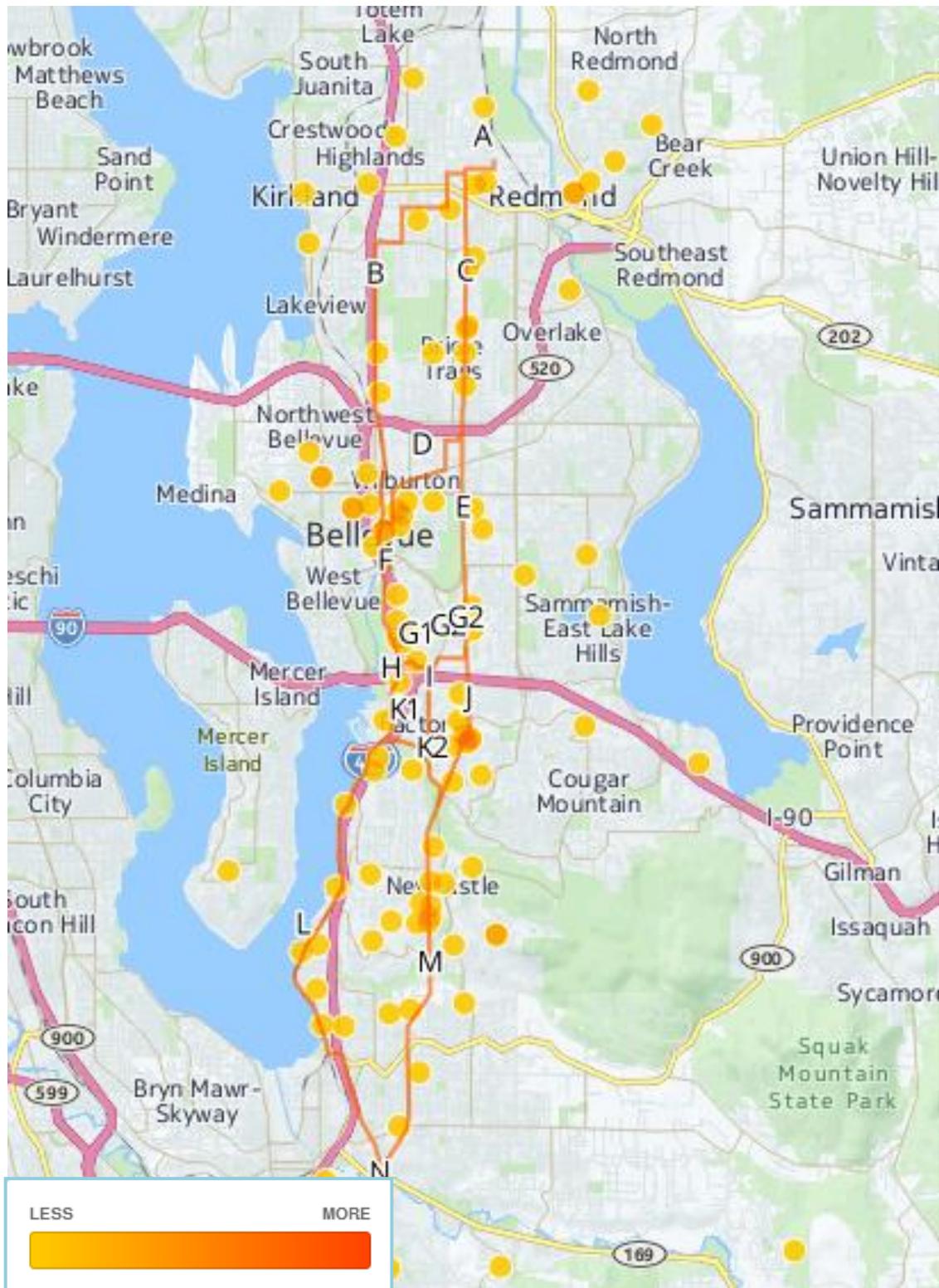
Topic	Total	Segments			Route options
		H	I	J	Laurel
<b>Total by segment</b>	<b>47</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Underground	11				
Cost	6				
Project need	7				
Visual	5	1	1	1	1
EMF	4	1	1	1	1
Alternative technology	3				
Community character	3				
Design structure type/appearance	2				
Health	2	1	1	1	1
Safety	2				

To conserve space, segments or routes that were not specifically mentioned in a communication are not included in this table.

*\*Please note communications often reference more than one topic and/or segment. As a result, totaling columns or rows will produce results that exceed the total number of communications received.*

### Feedback Frequency by Address

The following map indicates the frequency of communications based on the addresses of individuals and organizations providing communications during this period.



## Summary of Most Frequent Topics

Below is a summary of the topics (in order from most to least common) with key examples provided of the comments or questions received and a response from PSE. Communication excerpts are verbatim (including typographical errors) and reflect feedback from individuals who have contacted PSE about the Energize Eastside project. Please note that many communications received are statements and not questions. PSE makes every effort to respond to questions individually and has included general responses below by topic; general statements of fact or opinion do not typically receive detailed responses.

Multiple communication topics may be referenced in the same/an individual communication. Where appropriate, those topics have been combined in the summaries below.

The inclusion of the excerpts is to maintain a record of the information and feedback received by PSE and is not a reflection of PSE's concurrence or disagreement with any statements in whole or in part. The communications summary reflects PSE's public outreach process to assist the Community Advisory Group in gathering feedback that will be used to inform a recommendation about route selection.

### Underground

Suggestions have been made that PSE construct the new line underground, along with statements about undergrounding costs.

#### **Excerpts:**

- *If you have to do anything put them under ground.*
- *I do not support underground cable or anything that will inflate the expenses higher than necessary.*
- *I don't want overhead lines in our neighborhood. Please work to find underground options, or a more rural location.*

#### **Puget Sound Energy Response:**

Overhead transmission lines are PSE's first option for standard service due to their reliability and affordability, both of which are important to PSE's customers.

The biggest challenge to underground transmission lines is cost. The construction costs for an overhead transmission line will be about \$3 million to \$4 million per mile, versus \$20 million to \$28 million per mile to construct the line underground. These figures only take engineering and construction costs into consideration, and do not include additional costs such as land acquisition, traffic control, relocation of existing underground facilities that may conflict with an underground transmission line, future increased operation and maintenance costs, or taxes and overheads. These additional costs can be very significant – sometimes two to three times the construction costs.

When a transmission line is constructed overhead, project costs are distributed evenly between PSE's 1.1 million customers. If a transmission line were to be constructed underground, PSE can't justify asking customers across its entire service territory to pay the significant cost increases for a local aesthetic benefit. That's why, per state-approved tariff rules, the local jurisdiction or customer group requesting underground transmission lines must pay the difference between overhead and underground costs.

The tariff is in place to protect all of PSE's customers from substantial bill increases that would result from frequent requests to underground or relocate transmission lines (view the full tariff: [Schedule 80, Section](#)

34). PSE recognizes some of its customers are in the financial position to pay the substantial increase in rates to underground this project and others, but there are also many low- and fixed-income customers who depend on affordable rates. It is PSE's responsibility to balance the needs of all customers and provide service that is both reliable and affordable. These regulations are founded in fundamental public policy, which hinges on fairness and reasonableness for all customers, regardless of income. Having the local community pay to underground power lines for the aesthetic benefit is not new – it is the same concept our communities follow today when a new development undergounds the lower voltage distribution power lines.

In addition to cost, there are other factors to consider. For example:

- Putting power lines underground can have bigger environmental and neighborhood impacts. Undergrounding transmission lines requires extensive vegetation removal, trenching and installation of large (20 feet x 30 feet) access vaults every quarter mile and can be very disruptive to neighborhoods and the environment.
- Because they need additional cooling and insulation, underground transmission lines are typically installed in concrete duct banks, which can extend 5 or more feet below the surface. These require an easement 30 feet to 50 feet wide, which, unlike with overhead lines, must be completely free of trees.
- Underground lines typically take longer to repair, and repairs are more difficult. When an overhead line fails, crews can often repair it within hours. Repair of underground transmission lines can take days and even weeks, depending on the repairs that need to be made.

All of these factors are why PSE is proposing to construct the Energize Eastside project overhead.

Read more in PSE's [undergrounding](#) fact sheet.

## Cost

Feedback varies from comments about who should bear the cost of the project to questions about construction and life-cycle cost.

### **Excerpts:**

- *The people who live in these communities are the ones who will be paying for it and not all of us are millionaires!*
- *I think that it needs to be kept to the needs at hand and for the future without adding any extra expense*
- *The solution is underground power lines and the cost should be borne by the new developments and PSE.*

### **Puget Sound Energy Response:**

The total cost of the project is not yet known, but estimates range from \$150 million to \$300 million. Once a route is selected and the final design and alignment are determined, PSE will have a better idea of the total cost. In the meantime, PSE has put together data tables containing [cost estimates for the various route options](#) under consideration by the Community Advisory Group to assist them in making a recommendation.

Upgrades or additions to the electric infrastructure are shared by all of PSE's 1.1 million electric customers and paid for over time (unless a more expensive upgrade or addition is made to benefit only a certain area or community, such as undergrounding a line for the purpose of preserving aesthetics). While

there are many factors that go into determining the individual customers' monthly bill increase, rough estimates are that it will range from \$1 to \$2 per month for typical residential customers.

### **Project need**

Questions and comments have been submitted regarding whether the project is needed, specifically regarding the load forecast.

#### **Excerpts:**

- *I do understand the difficulty in forecasting... However, the load forecast is the foundation for the need for and timing of Energize Eastside, so should be as credible as any forecast can be.*
- *Can you explain how your projections are consistent with the City of Bellevue's Electric Reliability Study, which forecast demand growth of less than half the average rate shown in your graph?*
- *As was reported to the Bellevue City Council, the CEOs two of utilities, each more than 10x the size of PSE (NRG Energy & Duke Energy), made statements that electric load growth is shrinking not growing and no longer correlated with economic growth as in the past.*

#### **Puget Sound Energy Response:**

Much has changed on the Eastside in the last 20 years. Not only have communities grown and prospered, but the way we use electricity has changed — consumers plug in more devices and build bigger homes. Demand for electricity has grown dramatically, and it's time for PSE's infrastructure to catch up.

Economic development, job growth and associated population growth on the Eastside depend on a robust electrical transmission system. Eastside population has grown by eight<sup>1</sup> times since 1960, and recent growth trends are expected to continue — in fact, the Puget Sound Regional Council recently predicted that the Eastside population will grow by more than a third between 2010 and 2040, with population in the Bellevue central business district growing by more than 280 percent by 2040.<sup>2</sup>

At the same time, this economic growth is straining our region's existing electric system. Growth studies project that demand for reliable power will exceed capacity as early as 2017. PSE has essentially outgrown the electric system that serves its communities. Without substantial electric infrastructure upgrades, tens of thousands of residents and businesses will be at risk of more frequent and longer outages.

PSE's studies show that at the current rate of projected demand growth, the Eastside customer demand will exceed the Eastside's electric transmission system capacity in winter 2017-2018. The company plans to have portions of Energize Eastside in service in 2017, with the project fully operational by 2018. Increased operating procedures are being put into place to deal with unusual conditions in order to mitigate much of the increased risk for 2017 until construction is complete. However, this method of operations is not sustainable and won't work as the Eastside demand continues to grow. If the project is delayed, then PSE would have to implement corrective action plans to meet demand on a more frequent basis; however, these actions mean up to 60,000 customers are at an increased risk of power outages. The number of customers at risk of a significant outage will only increase as demand grows.

---

<sup>1</sup> Source: Puget Sound Regional Council 2013 Land Use Baseline: Maintenance Release 1 (MR1) Update

<sup>2</sup> In April 2014, the Puget Sound Regional Council updated their growth forecasts from 275 percent to 280 percent by 2040.

Some have asked specific questions about how PSE develops their projections for future need on the Eastside. PSE is currently developing a more comprehensive response to these questions, which will be shared with the commentors when available.

For more information, please see the [Eastside Need](#) page of the Energize Eastside project website as well as the [Needs Assessment Report](#).

### **Visual, design structure type/appearance, and community character**

Concerns have been raised about the potential for visual impacts to public and private property, the surrounding landscape, and unique community characteristics.

#### **Excerpts:**

- *I am really confused about what happens to the existing pair of 115 kV H-frame lines between Sammamish and Talbot Hill if the Energize Eastside 230 kV project is built.*
- *I've looked at the lake [Lake Washington] all my life, and this-we don't need to have power lines in front of us.*
- *The photo simulations of route segments H and J seem to show existing views severely impacted by new wires.*
- *My husband and I definitely do not want overhead wires corrupting all the beautiful neighborhoods from Redmond to Renton.*

#### **Puget Sound Energy Response:**

Delivering a project like Energize Eastside in a dense urban and suburban area is challenging, but PSE is committed to working with the communities involved to minimize impacts to the maximum extent practicable.

Aesthetics and views could not be included in the initial route screening effort because there is no publically available data for these factors. However, visual impacts will be considered during the environmental review process that will be conducted to comply with the State Environmental Policy Act (SEPA). Additionally, photo simulations have been developed as a part of the ongoing public outreach process. To view the photo simulations, please visit the [Energize Eastside Photo Simulations webpage](#). PSE will not build lattice towers for this project.

The placement or “spotting” of pole structures will be dependent upon factors such as available right of way width, location of access routes, and obstacle avoidance. PSE typically has some flexibility when it comes to where poles are placed on a property. Whenever possible, PSE will work with property owners to identify the option for pole placement with fewer potential effects. In some cases, strategic planting of vegetation, such as trees with larger spreading crowns, can be used to diffuse and mitigate view effects. In turn, the height, loading and overall size of each structure will be greatly affected by location. Additionally, recognized areas of environmental significance will be identified and avoided where practicable.

If Segment M through Newcastle is selected as part of the final route, the wooden H-frame poles carrying the 115 kV lines would be removed and replaced with new steel monopoles. The poles will need to be upgraded because the 230 kV transmission lines require a higher clearance and more robust structures to support the increased wire size, weight and tension of the lines.

While PSE does not have the preferred route or final design yet, the use of steel monopoles made of galvanized or weathering steel is anticipated. The exact measurements of poles and foundations will not

be known until after a final route is selected and detailed design has been completed. The poles are generally estimated to be between 85 feet and 130 feet, with diameters between 3 feet and 7 feet, but they could be taller or shorter depending on specific circumstances. Note that the pole diameter estimate refers to the diameter of the pole itself; if poles require a foundation, the overall footprint of the pole would increase. PSE will be asking for community feedback on these options. Pole height will depend on several factors such as topography and obstacles, wire tension, whether a pole is located in a straight line or at a corner, and the distance between poles, which could range from 200 feet to 1,000 feet. In general, taller poles allow for longer distances between them.

PSE knows that it will be bringing changes to any of the neighborhoods where lines are installed. For that reason, PSE and the Energize Eastside team are actively engaging the public to discuss routing, impacts, and potential design considerations to reduce these impacts while the company moves forward with this project that is vital to maintaining reliable power for all of the customers in the area.

PSE actively encourages all potentially affected community members to participate in ongoing community events and provide feedback on the various route options. In March and April, PSE hosted a series of Sub-Area Workshops for neighborhoods to provide feedback on the proposed transmission line segments and to discuss the evaluation factors most important to their communities. In addition, the community has had the opportunity to share their questions and comments at Question and Answer Sessions and Community Meetings.

In an urban area like the Eastside, there are unfortunately no corridors running north/south that completely avoid effects to residential neighborhoods. There is no easy way to connect the substations in Redmond and Renton; there are challenges with each option and that is why PSE is first learning what is important to its customers and the communities that may be affected before selecting a route.

### **Health, safety, and electric and magnetic fields**

Concerns have been presented about the potential for negative health and safety effects caused by the presence of high voltage transmission lines and proximity to the Olympic Pipeline.

#### **Excerpts:**

- *I strongly favor designs that reduce the field strength at points likely to be occupied by humans even on a transient basis.*
- *Some past studies that I have seen indicated adverse effect on cows grazing under high voltage power line.*
- *I'm concerned about the dangers of having very high voltage power lines running in the same corridor as underground fuel lines and long term safety implications.*

#### **Puget Sound Energy Response:**

At PSE, safety is always the top priority. Many customers have questions about electric and magnetic fields (EMF) and the team works to provide access to information on EMF in a few different ways.

Specifically, we:

- Follow all applicable federal, state, county and city rules, regulations and standards when constructing power facilities for the safe and reliable delivery of electric service;
- Remain informed about important developments in EMF research from reputable, international and national scientific and public health organizations and agencies that have reviewed the research on EMF; and
- Share accurate and objective information about EMF with PSE's customers.

Over the past 45 years, there have been many scientific studies conducted to determine if EMF from transmission lines (called “power frequency EMF”) has any effect on human health. To date, this large body of research does not show that exposure to power frequency EMF causes adverse health effects.

Additionally, PSE understands that you, and other local residents, may have more questions about electromagnetic fields. PSE has hired Drew Thatcher – an independent, board-certified health physicist – to address more specific EMF questions. If you or your neighbors would like to ask questions of Drew, the Energize Eastside team would be happy to connect you with him for more information.

Also, PSE is expecting to have information on EMF measurements in the existing utility corridors (what magnetic field measurements exists today) and modeling numbers with the new transmission line in late 2014. Once the EMF modeling study is complete, it will be posted on the Energize Eastside project website.

Regarding the Olympic Pipeline, across North America, significant high voltage electric transmission lines (even at voltages much higher than 230 kV) exist parallel and adjacent to petroleum product pipelines like the Olympic Pipeline and have been operated safely in close proximity for many decades.

PSE is also a natural gas company. PSE and its contractors are very familiar with concerns regarding pipeline safety and employ safe construction practices when performing work in the vicinity of pipelines. PSE’s experiences and those of other utilities and pipeline companies have demonstrated that power lines can and do safely occupy the same corridor as pipelines.

PSE has a long history of working closely with Olympic. PSE has shared this corridor with Olympic Pipeline for decades and the two companies have a shared interest in the protection and safe operation of the facilities in the corridor. As an example, PSE and Olympic wrapped up a project in 2010 that is similar to Energize Eastside. A series of existing H-frame poles were replaced with new poles and 230 kV lines in an existing easement shared with the Northwest Pipeline. The Energize Eastside project manager, Leann Kostek, safely managed construction of the Sedro Woolley-Horse Ranch 230 kV project that ran from Skagit County to Snohomish County.

PSE also has a history of moving pipelines when required and understands the construction and safety issues facing such moves. For example, PSE is moving its natural gas pipeline for the Alaskan Way Viaduct construction. Additionally, PSE and Olympic are working with Sound Transit to move poles and the pipeline for the East Link project.

### **Alternative technology**

Questions and suggestions have been posed regarding ways to address the project need without building a transmission line.

#### **Excerpts:**

- *Your comments about batteries for peak load support not being ready yet for utility scale use support what I have read.*
- *You should...devise an alternate strategy like they are doing in the rest of the World.*
- *PSE could take conservation to a new level. At no charge to the customer, PSE could insulate every home and business to a much higher standard than is used in this area.*

**Puget Sound Energy Response:**

Before launching this project, PSE studied several different solutions in addition to building the new overhead transmission lines. Those alternatives included reducing demand through conservation, increasing the capacity of PSE's existing electric transmission lines, generating energy locally, and building new infrastructure. However, these other solutions are not enough to solve the problem of transporting the energy we have to the fastest-growing places and the people who need it.

PSE reviewed both the planned conservation as well as additional potential demand reduction to meet the growing need. This included programs such as gas conversions and increased incentives for insulation and efficiency improvements in existing residences and businesses. In addition, solar panels and other types of local renewable generation were considered. All of these potential measures combined were unable to meet the need for the projected growth in the Eastside region. After a detailed analysis, PSE determined that a combination of continued conservation and infrastructure upgrades – a new substation and higher capacity transmission lines – is the best way to reliably meet the Eastside's growing energy needs. Find more information in the [Eastside 230 kV Project Constraint and Opportunity Study for Linear Site Selection](#) on the project website.

Many have asked if building the 230 kV transmission line can be avoided by upgrading the existing 115 kV transmission line. PSE has already made as many upgrades as possible to its existing infrastructure to postpone the need for the new 230 kV line. By increasing the voltage from 115 kV to 230 kV, the wires must be placed on new poles due to different clearance requirements and the fact that the new wires are heavier and therefore require sturdier poles to support them.

Additionally, through upgraded lighting, appliances and equipment, increased weatherization, and energy-efficient building technologies, PSE customers helped us save enough electricity to power 30,000 homes in 2012. Despite these aggressive conservation initiatives by PSE and its customers over the past few decades, studies show demand is dramatically outpacing supply.

Conservation alone won't create the capacity to keep up with our region's growth. The Eastside economy and population are growing far faster than our conservation efforts can keep up with. Without substantial electric infrastructure upgrades, tens of thousands of residents and businesses will be at risk of more frequent and longer outages. PSE's problem is not a lack of energy to power Eastside communities. Instead, the problem PSE needs to solve is transporting the energy it has to the homes and businesses that need it. The Eastside is growing faster than any other region in Washington, which is straining our region's electric system. Growth studies project that demand for reliable power will exceed capacity as early as 2017, increasing the possibility of outages for as many as 60,000 customers on the Eastside.

PSE is closely monitoring battery storage technology, and is moving forward with a pilot project in Glacier, Wash. to test the viability of the technology on a small scale. The Glacier battery pilot project will install four batteries, each the size of a semi-tractor trailer, to provide 2 megawatts (MW) of capacity. In contrast, to serve 350,000 customers on the Eastside, we need to add more than 60 MW starting in 2017-18, growing quickly to more than 100 MW. This would require PSE to initially install up to 300 batteries, each the size of a semi-tractor trailer. It would also still require new power lines to distribute electricity from the battery site to our customers.

Furthermore, while battery storage may be a possible solution in certain situations, the technology is not yet mature enough to reliably and cost effectively solve the Eastside's capacity problems. To our knowledge, no utility has used battery storage to replace a power delivery system (i.e. substations and transmission lines); rather, it has primarily been used as backup storage on the generation system, or to address system voltage or frequency stability issues, and even that technology is still emerging. PSE is

unwilling to risk the electric reliability of 350,000 customers on unproven technology. To do so would be irresponsible, and result in an unacceptable risk to public health and safety.

You can read more about the alternatives studied in PSE's [needs assessment report](#), [solutions report](#), [non-wires solution analysis](#), and much more on the [Energize Eastside project website](#).