



## Project Hawks Prairie Park and Ride

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**Development:**  
**Hawks Prairie Park and Ride**  
2548 Hogum Bay Road NE., Lacey,  
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### Project Information



### Project Overview

**Applicant:** Intercity Transit, Olympia, WA

**Goal of the project:** Give new life to public land and provide a much needed park and ride facility in one of the most rapidly developing areas in Washington State, located along Interstate 5 (I-5) in northeast Thurston County. This corridor is considered one of the most congested corridors in Washington.

**Location of the site:** Lacey, WA

**Approximate size of the site (in acres):** 8.1 acres

**Former use of the site:** Landfill – The Hawks Prairie landfill began in 1945 with a 40-acre excavated gravel pit. Around 1970, landfilling replaced refuse burning, and the hole in the ground filled up and became a mound. The county continued digging new holes for garbage and filling them, extending the mounded surface. The most recent area, "Cell 1," was opened in 1990. They continued to bury garbage there until 2000 when the landfill operation was closed. More than 50 years' worth of Thurston County's garbage is buried on the 140-acre site in Hawks Prairie, now known as the Thurston County Waste and Recovery Center (WARC). The Hawks Prairie Park and Ride was built on an 8.1-acre portion of the oldest, most variably compacted, section of the WARC.

**Actual end use of the site:** Park and ride lot and transit transfer site featuring:

- 332 parking spaces
- 10 ADA spaces
- Five electric vehicle charging stations
- ADA transit boarding area
- Passenger shelters
- 24/7 camera surveillance system
- 5 bay transit island
- Bicycle shelter

**Date the project was completed:** Open for public use January 2013

### ***What makes this project unique?***

The Hawks Prairie Park & Ride project represents innovative land use, sustainable design, and public stewardship. The project brings valuable new life to what was unused 'open space' public land located in one of Washington State's fastest-growing regions. A long-closed portion of a municipal solid waste landfill that had been turned into part of a regional waste recovery center has been re-imagined and developed into the largest, most innovative park and ride facility in Thurston County, Washington. The project, which built a 332-stall park and ride lot with transportation amenities, contributes a new and much-needed component to the region's transportation infrastructure and creates a valuable community asset.

Intercity Transit's efforts to identify needs and potential park and ride locations in its service district were initially summarized in a market and feasibility analysis in 1995. Input was obtained from commuters, transit users, public entities, businesses, commercial development interests and private property owners. At that time, the agency's study findings were incorporated into the Thurston Regional Planning Council's Regional Transportation Plan as an element of improvements to be made in northeast Thurston County/City of Lacey along the I-5 corridor. The area was identified as having the greatest need for additional park and ride facilities in the South Puget Sound region.

There was a small, existing 140-stall Washington State Department of Transportation (WSDOT) park and ride lot near the I-5 interchange with Marvin Road in the Hawks Prairie area. Intercity Transit assumed responsibility for managing this lot, on leased Department of Natural Resources land, in 1995. However, the Hawks Prairie area was rapidly growing and commercial development was spreading on both sides of I-5. Intercity Transit continued to focus on identifying possible locations for a larger park and ride lot. The agency completed a site selection and environmental study in 1999 and the landfill was one of the seven sites selected. By 2002, all of the sites except the landfill had been sold for commercial development and, in 2004, the Department of Natural Resources sold the land holding the only public park and ride lot in Hawks Prairie.

This dislocated a large number of commuters and precipitated a new round of discussions with WSDOT, the City of Lacey and Thurston County concerning the need for a new park and ride lot facility. Intercity Transit identified WSDOT's Regional Mobility Grant (RMG) program as a possible source of funding and continued to develop support and public and private partnerships for construction of a new park and ride lot. Intercity Transit hired KPFF Engineering Consultants in 2008 to complete a feasibility study for building the park and ride on the landfill. The study showed it was possible and incorporated many sustainable design features. Intercity Transit applied for and received two-biennium funding from RMG funding. Even the region's news media began reporting on the issue and The Olympian ran a series of editorials and interviews stating the importance of expanding the transportation infrastructure within the region.

We estimate that this facility will reduce vehicle trips in our region by more than 155,000 and reduce the number of miles traveled by more than 5 million, [once a full complement of transportation services are realized]. Many of those trips and miles saved will be from fewer cars on the South Sound portion of I-5, one of the most congested corridors in Washington State. Mark Eldridge, Regional Mobility Grant Program Manager, Washington State Department of Transportation

### ***What were the primary funding sources?***

Intercity Transit received \$6,565,676 in Regional Mobility Grant program funding through the Washington State Department of Transportation. Given the amount of work and length of time that would be required to complete the project, it was granted as two-biennium funding. Intercity Transit's local match was a total of \$1,641,419. The cost of the total project was \$8,207,095.

### ***What contaminants were present on the site?***

**Aged refuse and associated contaminated materials:** The site was part of the oldest section of the WARC landfill. Landfilling practices and record keeping became more regulated over time. During the period that this portion of the landfill was in use, the refuse that was deposited and the compacting practices employed varied significantly over time. While the WARC staff provided their best information and test holes were drilled in the project planning stages, there were many unknowns about the characteristics, condition and depth of the refuse. While the refuse was supposed to be below the level where grading would occur, construction revealed many areas of much higher refuse across the site. Also refuse was found in a few areas that had been described as native ground. In order to achieve the correct final site grading and support installation of the new gas collection system, construction work required removal and proper disposal of refuse from many areas of the site. Encountering so many high pockets of refuse also required disposal of a great deal of contaminated old liner and contaminated fill from above the refuse in those areas. Health and safety protocols were implemented to ensure personnel were not exposed to hazards. Approximately \$1 million of the project's costs came from removal and disposal of refuse and contaminated materials.

**Prevention of dispersal of odors and refuse:** The site is close to commercial development and housing areas. Lawsuits had been successfully pursued against the WARC in the past to require the WARC to prevent dispersal of odors and refuse. During construction, methods were in place to control odors when refuse was uncovered. In the past pieces of refuse had been scattered over surrounding areas by seagulls and other birds. During construction the contractors cooperated with all of the WARC's bird control measures. Once construction was complete, the refuse was completely enclosed again so no dispersal can occur.

**Water perched in the refuse:** During the site's active phase as a landfill, water had infiltrated the refuse. When this section was closed, attempts were made to drain the area and a complete liner was installed. Over time areas of the site were reopened and closed again. Age and settlement disrupted parts of the liner. When the park and ride construction moved forward, quite a bit of water was found pocketed in the refuse. The groundwater level was not far beneath the site. During construction every effort had to be made to make sure the contaminated water was drained and not allowed to permeate the groundwater. WARC staff tested the perimeter water monitoring wells on a set schedule during construction. As part of the construction of the park and ride facility, a complete, new, heavier, completely sealed liner was installed over the site. Further grading and water flow engineering ensures that all stormwater runoff from the site channels into the WARC's stormwater management system. The design ensures that no water will further permeate the refuse or run off the site onto perimeter native surfaces, thus keeping contaminated water away from the groundwater.

**Methane and other gases:** When this portion of the landfill was closed, a gas collection system was installed. The gas was channeled to a flare in another area of the landfill. During construction it was found that areas of the original gas collection system had been compromised over time due to incorrect installation, infiltration by water, or disruption by landfill settlement. A temporary gas collection system was installed during the first phases of the construction and a complete new gas collection system was installed during the final construction. WARC staff have found that the improved system has greatly increased the gas flow to their flare, making it easier to manage the flare.

**Particles of dust in the air:** The 8.1 acres site was covered by anywhere from inches to twelve feet of fill soil above the original liner. To compact the site, 148,000 tons of modified gravel barrow preload was piled on half the site for six months and then moved to the other half of the site for compaction for six months. During final construction, the majority of the preload was removed, with the rest being graded around the site. In places much of the original fill was also removed or graded. All of this movement of fill materials resulted in a great deal of potential for mud on the roads and dust in the air. The Olympic Region Clean Air Agency required stringent management of the potential for so much air pollution. Contractors were required to water surfaces and sweep roads.

**Potential for continued uneven settlement:** While not strictly a contaminant, the nature of the subsurface for the park and ride, aging refuse, required extensive remediation measures to provide a stable platform for construction of the park and ride. The 2008 Feasibility Study revealed that the old landfill waste would continue to decompose causing differential settlement over time whether or not the site development occurred. Compacting the waste before development began removed 'soft' spots and increased the site's bearing capacity to support project loads and thereby will prevent settlement.

The engineering design team considered two alternatives for compacting the site:

1. Preload/surcharge: Placing large amounts of fill material on the site for an extended period of time to mimic project loads and condense the waste material; and

2. Deep Dynamic Compaction (DDC): Dropping heavy weights from cranes across the site in multiple grid patterns.

The engineering design team determined the preload/surcharge option was the preferred alternative because the preload material could be reused to cover the new liner and support the pavement section. It could also be used to construct the supporting slope on the north side of the site. The DDC method would impose greater negative impact on the nearby properties from noise, vibration, possible creation of odors and potential for air pollution from dust particles.

**Remediation costs:** It is interesting calculating remediation costs in a project such as this. By far most of the preload phase and construction was aimed at mitigating and remediating aspects of building on an aging section of landfill. If you remove the portions of the design and construction that supported permitting and actual use of the lot as opposed to remediation or mitigation, probably 80% of the project's \$8.2 million dollar budget went to some aspect of remediation or mitigation.

# Sustainability Impact Questions

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## **1. Describe the balance of social, economic and environmental impact for your project that would deem the project “sustainable”.**

Public transportation is an essential element to a well-functioning transportation system. Intercity Transit’s mission is to provide and promote transportation choices that support an accessible, sustainable, livable, healthy, and prosperous community. To that end, Intercity Transit provides a diversity of transportation services and infrastructure to support the economic, social and environmental vitality of the region.

Transportation costs are the highest household expense other than housing. Therefore, options to carpool, vanpool, ride the bus – and even bicycle or walk – are not only good for the region’s air quality, but good for its pocketbook. And there is a highly proven correlation between alternative transportation use and personal health. The Hawks Prairie Park Ride project supports Intercity Transit’s three major service modes: fixed-route bus service, vanpool, and carpool. Further, express bus service to Tacoma and Seattle will begin at the park and ride in September of 2013.

Transportation officials estimate the park and ride will help reduce more than 155,000 vehicle trips along I-5 and reduce vehicle miles traveled by almost 5.2 million per year.

Other environmental protection measures the team implemented during design and construction included:

- Designing and installing a new, modern methane gas collection system.
- Designing and placing a new, modern cap and liner system.
- Designing surface stormwater drainage that incorporates grassy swales for controlling the flow, trapping oil and other parking lot surface contaminants, as well as biofiltration points to ensure that the run-off into the WARC’s system is measured and as clean as possible.
- Designing subsurface drainage in the form of gravel channels and natural gradients to use gravity to direct any perimeter infiltration of water into the stormwater drainage system.

The benefits of the park and ride project, however, go beyond environmental sustainability on the site itself. This innovative project reflects Intercity Transit’s commitment to community and economic sustainability. As the region’s economy slowly recovers from the recession, construction projects such as this are a real boost to consultants, contractors, workers, vendors, and suppliers. The American Public Transportation Association estimates \$3 in economic stimulus are realized from every \$1 investment in transit. Given a total project investment of \$8.28 million, the project alone may have spread as much as \$24.6 million in much-needed stimulus money to the regional economy.

Beyond the immediate economy, Intercity Transit is committed to supporting long-term, sustainable growth in our community. The Thurston Regional Planning Council and its constituent members have identified that strong public transit infrastructure is key to the region’s sustainable growth. The Hawks Prairie Park & Ride will provide a vital link in expansion of transit services to the fast-developing northeast Lacey area as funding becomes available. This facility is designed to meet present and future needs without requiring any costly reconstruction and exemplifies Intercity Transit’s commitment to maximizing resources to support sustainable community life.

Our community leaders have the same opinion of this project: "This project has provided a big and positive economic impact to our region, employing people and suppliers for the past five years (2008- 2012), amidst the economic recession. The economic benefits of this project now spread further by keeping the cost of commuting down for long-distance commuters and helping free up space on our region’s congested interstate so people and freight can move more efficiently."

*Virgil Clarkson, Mayor, City of Lacey*

## **2. What aspects of energy efficiency were incorporated into the redevelopment of the project? For instance, prior to the project going on line, was there any implementation of renewal energy resources (i.e. solar, wind or geothermal energy) to drive the cleanup or construction process?**

The Hawks Prairie Park and Ride has five electric vehicle charging stations. The West Coast of the United States is a key region for the nation’s largest deployment of electric vehicle charging infrastructure. Our park and ride lot is right off the highway with easy access. These charging stations allow commuters to park their vehicles and use transit, accommodating long-distance travelers who use electric vehicles. Since the facility’s opening in January 2013, the charging stations are appearing on the maps used by

owners of electric vehicles and are showing usage. The charging stations are part of a network that provides reports on number of gallons of gasoline saved and other aspects of sustainability. The park and ride is open 24 hours a day and requires lighting. Studies show that it will have heaviest usage during commuting hours. In order to provide satisfactory lighting but save energy during the night when little use will occur, the lighting system was designed to dim the lights between 11 p.m. to 5 a.m., reducing electricity use. The lighting analysis shows this will reduce electrical use 50 percent. The exact pattern of dimming had to be developed on a light by light basis to ensure that there were no pools of darkness so users would have sufficient light in any part of the lot. The pattern of dimming also had to meet the requirements of the surveillance camera system so that the cameras could continue to function correctly even in areas of less light.

### ***3. What water conservation measures were implemented in the project (ie.. impacting potable water, gray water, stormwater, etc.)?***

This project requires no irrigation for the landscaping. Western Washington has a unique climate that makes handling stormwater and landscaping an important design consideration. Lacey receives about 50 inches of rain a year during the months of October to June. July through September receives very little rain. To conserve water, mostly native drought tolerant plants were used. These plants are adapted to the area's dry summers and wet winters require very little maintenance. The park and ride lot was designed to minimize the impact on the WARC's stormwater collection system. The project uses swales and grassy strips as absorbent filters, along with biofiltration devices to channel and filter stormwater run-off. These design features are important because of the high amount of seasonal rain the area receives.

### ***4. Besides water recycling, were there any other examples of materials recycling that were performed on site—including perhaps to eliminate waste and even generate energy or power?***

The north side of the site had a steep drop off to the native surface due to the years of mounding refuse on the area. The original design included a block retaining wall for much of the north side to support the vehicle access road and transit lane. As the planning progressed, it was determined that if a permanent slope easement could be obtained from the adjoining site, a considerable portion pre-load material could be used to construct a buttressing slope. Intercity Transit negotiated a lease from the owners of the site and constructed the slope. As part of the design, the slope was heavily planted with trees to provide a natural means to further anchor the slope and provide natural screening for the adjoining property. Using the fill for a slope instead of building a wall saved the project over \$100,000 in construction costs and provided a much more acceptable screen to the neighboring property.

### ***5. How does this redevelopment support a healthy indoor air quality for any inhabitants; specifically, what techniques were used to remediate the site and protect indoor air quality?***

There are no structures built on this site, but we're improving air quality in our community by providing transportation alternatives that emit fewer pollutants by making fuel use more efficient. As stated previously, during construction measures were put in place to control odor dispersal and contamination of the air by dust particles.

### ***6. What materials were used in the redevelopment to classify this project as "sustainable"?***

To minimize the impacts from future differential settlement, the design called for installing a geogrid fabric, called Tensar TX140 triaxial geogrid over the old refuse material under 7-plus acres of the site. The geogrid spreads the load of the pavement and vehicles over a large area and removes 'point' loads above the refuse. 'Soft' spots from faster-decomposing refuse will not result in potholes because the geogrid liner acts as a bridge over them, supported by other areas of slower decomposition. As the slower-decomposing areas settle over time, the entire site should gradually settle with the slower areas, thereby minimizing maintenance and repairs. The site was built up in layers with the geogrid, a geotextile fabric and the new liner, with structural fill in between. Due to high traffic volumes and heavy loads from transit vehicles, Portland Cement Concrete (PCC) pavements are typically used at park and ride facilities. Because settlement at this facility will occur over time, the design called for flexible Asphalt Concrete Pavement (ACP) because it will adjust more with settlement. It does not crack like rigid PCC does and is less expensive to maintain and replace. In heavy traffic areas such as the vehicle access road and the transit lanes, additional geotextile fabric was added in layers to the ACP to increase its strength and maintain its flexibility. Using ACP will reduce Intercity Transit's long-term maintenance costs.

### ***7. How does the project support a high quality of life for the adjacent community and how were they included in the planning of this project?***

The 2-year park and ride lot site selection study (1998-99) included a public review process and a citizen involvement strategy to ensure maximum public input. Also, a Technical Advisory Committee of staff from Intercity Transit, WSDOT, Thurston County, and City of Lacey had oversight responsibilities and, finally, a stakeholder group of employers, land owners, transit riders, and neighborhood groups was created and interviews conducted to gain an understanding of issues and concerns. A total of seven sites were selected for consideration, and three public workshops were held to review and discuss the findings.

Repetitive...In 2004, DNR sold the land that held the only public park and ride in Hawks Prairie. This dislocated a large number of daily commuters and precipitated a new round of discussions with WSDOT and the City of Lacey concerning the need for a new park and ride lot facility. Even the region's news media began reporting on the issue and The Olympian ran a series of editorials stating the importance of expanding the transportation infrastructure within the region.

During the planning and design phases, Intercity Transit had strong interagency participation and support from Thurston County, the City of Lacey, the Department of Ecology, the Thurston Regional Planning Council, local and state law enforcement, fire districts, Pierce Transit, and the Meridian Campus Commercial Owner's Association, which represents the large commercial business park near the site. Some phases involved excavating refuse, which could potentially release strong odors. The project team notified adjacent property owners in advance by e-mail, telephone, and through the media, which resulted in news coverage. In addition, the project team and contractors made every effort to contain odors by efficiently excavating refuse and quickly covering any exposed refuse with heavy plastic.

### ***8.What energy savings are anticipated as a result of the sustainable methods used?***

More than 155,000 vehicle trips along I-5 are estimated to be saved each year because of ridesharing made feasible by the park and ride facility. This translates to a reduction in vehicle miles traveled by almost 5.2 million a year.

Intercity Transit anticipates lower maintenance costs for the park and ride than traditional park and rides, because flexible asphalt was used instead of rigid concrete. Over time there will be more settlement because of the landfill, and rigid concrete would crack, and is much more expensive to repair. We are assuming we will have to do some resurfacing of the asphalt in the bus turnaround, the area that will take the most punishment from the weight of the buses, in ten years.

### ***9.What water savings are anticipated as a result of the sustainable methods used?***

Because we used drought tolerant landscaping, we do not have an irrigation system. No water is used on the site. Landscaping covers approximately three acres of the eight acre site. Based on historic water use at other Intercity Transit facilities, we are saving over a million gallons a year by not irrigating our site.

### ***10.What level of sustainable/green remediation (inSitu) techniques were used during the cleanup phase?***

As previously mentioned, the nature of the subsurface for the park and ride, aging refuse, required extensive remediation measures to provide a stable platform for construction of the park and ride. A considerable amount of refuse had to be hauled off-site to a regulated landfill.

The 2008 Feasibility Study revealed that the old landfill waste would continue to decompose causing differential settlement over time whether or not the site development occurred. Compacting the waste before development began removed 'soft' spots and increased the site's bearing capacity to support project loads and thereby will prevent settlement. The project engineers used the preload, 148,000 tons of modified gravel barrow, instead of dynamic compaction. They also re-used of the majority of the preload in grading and constructing the north permanent slope easement. Reusing the preload material saved considerable truck traffic compared to a scenario where different, additional materials would have been brought in to accomplish the same task.

