

## Pacific Northwest National Laboratory

### 7. Infrastructure

Pacific Northwest National Laboratory (PNNL) is operated by Battelle Memorial Institute and is located in Richland, Washington, with multiple offsite locations including the Marine Sciences Laboratory located in Sequim, Washington. The total laboratory population is approximately 4,000 staff as of March 2008.

The current PNNL campus consists of land owned by DOE, Battelle, and third parties and is located at the very north end of the City of Richland. The campus consists of about 350 acres of DOE-owned land, 250 acres of land owned by Battelle, and other privately-owned land. This multi-owned land profile provides a unique characteristic for PNNL of utilities infrastructure owned, operated, and maintained by both DOE and the City of Richland. The facility profile currently totals 2,015,000 gross square feet (gsf) of space in 96 individual buildings. Ownership is split as follows: DOE-owned of 762,000 gsf in 29 buildings of which 224,000 gsf is EMSL (SC) and 538,000 gsf is 300 Area buildings (EM); Battelle-owned of 407,000 gsf in 39 buildings; and various third-party leased space of 846,000 gsf in 28 buildings. The leased facilities portion of the total PNNL facility profile represents 42% of the total, a high percentage compared to other national laboratories.

With the planned facilities actions through FY 2012, PNNL's facility profile will increase to 2,181,000 gsf at which time division of ownership will be 794,000 gsf DOE-owned; 407,000 gsf Battelle-owned; and 980,000 gsf of leased facilities. Even after these facility actions PNNL's dependence on leased space will remain disproportionately high pending completion of the Systems Development Laboratory in FY 2015.

With the exception of four retained facilities, the 325, 331, 318, and 350 building complexes, and two other support buildings, all other PNNL 300 Area buildings are scheduled to be transferred to the Hanford Site clean-up contractor over the next four years. PNNL is planning to exit the 336, 338, and 3730 buildings in FY 2008 and 3760 building in FY 2009. The 326, 329, 320, and 331 auxiliary buildings will be the last buildings vacated during FY 2011.

As part of the CRL project, the 300 Area retained facilities will see significant investments (GPP, Institutional GPP, IGPP, and laboratory overhead funding) over the next 3 years to extend their useful life for an additional 20 years. The PNNL campus utilities infrastructure serving the retained facilities in the 300 Area, the replacement buildings on the Horn Rapids Triangle, and facilities within the main campus are also being reconfigured, upgraded, or replaced to improve reliability and add additional capability for the future.

During fiscal years 2009 and 2010, construction of the 201,000 gsf Physical Sciences Facility (line item funding) will be well underway with expected completion in FY 2011. During this time, Laboratory GPP funds will be used to construct the Nanomaterials Synthesis Laboratory (NSL), a 7,000 square-foot wet chemistry laboratory facility. As a result of establishing the Science Laboratory Infrastructure (SLI) initiative, this is PNNL's final approved Laboratory GPP facility project. All future facility and infrastructure investments under \$5 million will be funded with IGPP for capital actions and laboratory

overheads for expense actions. Scheduled to open during the first quarter of FY 2010, the CRL Project’s Biological Sciences Facility (BSF) and Computational Sciences Facility (CSF) will be new third-party leased buildings constructed on Battelle-owned land west of EMSL. PNNL’s Land Use Plan is provided in Appendix A and provides additional details regarding PNNL’s site planning for land and real property assets.

In accordance with the DOE-SC Annual Laboratory Plan guidance, Table 4 below provides only the DOE-SC facilities data. For PNNL, the EMSL is the only current DOE-SC facility and is basis of this information. This is consistent with the March 2008 approved DOE-SC-PNSO/DOE-EM-RL Operational Agreement that recognizes the PNNL 300 Area retained facilities as DOE-EM buildings.

**Table 1.** PNNL’s DOE-SC Facilities and Infrastructure Data Summary

<b>SC Infrastructure Data Summary</b>		
Replacement Plant Value (\$M) (EMSL – FY09 basis)		\$80M
Total Deferred Maintenance (\$K)		\$41K
Asset Condition Index	MC	1.00
	MD	
	NMD	
Asset Utilization Index	Office	
	Warehouse	
	Laboratory	1.00
	Housing	
Prior Year Maintenance (\$M) (FY 2007)		\$1.6M
<b>MC = Mission Critical; MD = Mission Dependent, NMD = Non-Mission Dependent</b>		

## Facilities and Infrastructure to Support Laboratory Missions

Facilities and infrastructure investments at PNNL over the next ten years are designed to enable the scientific programs and ensure mission readiness of the Laboratory. These investments make use of multiple funding sources and are aligned to enable PNNL’s four business lines as discussed in Sections 4.0 and 5.0. Table 5 provides a summary of the condition of the current key facilities and the planned future investments for each business line. Condition definitions are consistent with the Facility Information Management System (FIMS). Additionally, a single Laboratory Operations category is included to address the operations support facilities. A complete list of PNNL’s facilities is provided in Appendix B.

**Table 2.** PNNL’s Facilities and Infrastructure to Support Laboratory Business Lines

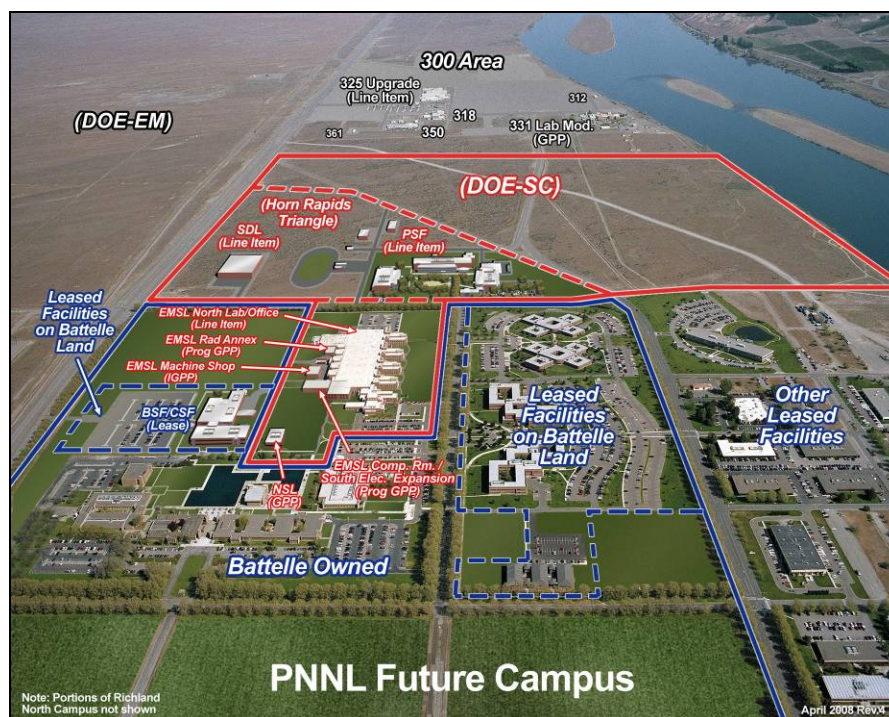
<b>Business Line</b>	<b>Facilities</b>	<b>Summary Condition Evaluation</b>	<b>Planned Investments</b>
<b>Strengthen U.S. Scientific Foundations for Innovation</b>	331 Bldg.	The facilities supporting this business line are in Excellent to Good condition.	The EMSL building is planning multiple expansions over the next 10 years to support the scientific user facility including a Rad Annex (prog GPP), computer room expansion (prog GPP), electrical plant (prog GPP), and space to accommodate structural needs for high resolution imaging (prog. line item). Additionally, a PNNL machine shop (IGPP) will be provided as an addition to
	EMSL		
	JGCRI	These facilities appropriately support this business line. EMSL is the newest and largest DOE facility on campus (opened in 1997) and is in Excellent condition.	
	LSL2		
	MATH	Deferred maintenance in all of these buildings are at acceptable levels. The 300 Area retained facility (331 Bldg.) supporting this business line will be	
	POP		
	PSF		
	PSL		
Other facilities (as			

Business Line	Facilities	Summary Condition Evaluation	Planned Investments
<p><b>Increase U.S. Energy Capacity and Reduce Dependence on Imported Oil</b></p>	<p>detailed in Appendix B)</p> <p>2400 Stevens</p> <p>APEL</p> <p>BSEL</p> <p>MATH</p> <p>MSL</p> <p>Other facilities (as detailed in Appendix B)</p>	<p>The facilities supporting this business line are in Excellent to Good condition with the exception of the Math Bldg. which is currently evaluated as Adequate as a building in total. However, the EIOC capability and the supporting infrastructure located in this building have been upgraded and are deemed in Excellent condition. These facilities currently support the business line appropriately but in the future it is projected that additional large instrument/system lab space will be needed. Additionally, it should be noted that the majority of the work in this business line takes place in third-party leased space.</p>	<p>The SDL is planned as a SLI Line Item project and scheduled for completion in FY2015. The SDL will replace lesser quality leased space (2400 Stevens and APEL buildings) and support a number of PNNL business lines with new large instrument/system lab space.</p>
<p><b>Prevent and Counter Terrorism and Proliferation of Weapons of Mass Destruction</b></p>	<p>2400 Stevens</p> <p>318 Bldg.</p> <p>320 Bldg.</p> <p>326 Bldg.</p> <p>329 Bldg.</p> <p>MSL</p> <p>NSB</p> <p>RPL – 325 Bldg.</p> <p>Other facilities (as detailed in Appendix B)</p>	<p>The buildings supporting this business line are in Excellent to Adequate condition. All space currently evaluated as Adequate is located in the 300 Area and will be upgraded or replaced by the CRL Project. With this upgrade/replacement effort, these facilities will continue to appropriately support this business line.</p>	<p>The CRL Project will upgrade or replace 300 Area facilities supporting this business line. The SDL is planned as a SLI Line Item project and scheduled for completion in FY 2015. The SDL will replace lesser quality leased laboratory/office space.</p>
<p><b>Reduce Environmental Effects of Human Activity and Create Sustainable Systems</b></p>	<p>331 Bldg</p> <p>APEL</p> <p>BSEL</p> <p>EMSL</p> <p>MSL</p> <p>RPL - 325 Bldg.</p> <p>Other facilities (as detailed in Appendix B)</p>	<p>The buildings supporting this business line are in Excellent to Adequate condition. All space currently evaluated as Adequate is located in the 300 Area and will be upgraded or replaced by the CRL Project. All other buildings are either third-party leased or Battelle owned buildings and in Excellent to Good condition. With the upgrade/replacement of 300 Area facilities and the continued maintenance investments in Battelle owned and third-party leased facilities, the facilities will continue to appropriately support this business line.</p>	<p>The CRL Project will upgrade or replace 300 Area facilities supporting this business line. The SDL is planned as a SLI Line Item project and scheduled for completion in FY 2015. The SDL will replace lesser quality offsite leased space with new large instrument/system lab space.</p>
<p><b>Laboratory Operations</b></p>	<p>Environmental Technology Bldg. (ETB)</p> <p>Information Sciences Bldg. 2</p>	<p>The buildings supporting Laboratory Operations range in condition from Excellent to Good condition with a few exceptions that do not have an impact on operations. The 350 complex is part of</p>	<p>IGPP and Lab overhead funds will be used to improve and provide general facilities, infrastructure, and grounds throughout the PNNL campus as appropriate. Specifically, this will</p>

Business Line	Facilities	Summary Condition Evaluation	Planned Investments
	(ISB2)		
	Laboratory Support Bldg. (LSB)		
	Plant Opns. and Maint. Facility (350 Complex)		
	PNNL Guest House		
	Research Operations Bldg. (ROB)		
	RTL support bldgs.		
	Shipping, receiving, warehouse bldgs. (BRSW, TSW, RSW)		
	Whole Body Counter Fac. (747)		
	Other facilities (as detailed in Appendix B)		

### Strategic Site Investments

Site facilities and infrastructure investments at PNNL over the next five years are grouped into three categories: the CRL project, EMSL, and general PNNL campus facilities and infrastructure. Consistent with the FY 2010 IFI Crosscut (Schedule 19), these investment categories include line item, landlord or programmatic GPP, IGPP, and facilities and infrastructure related laboratory overhead funding sources. These investments are in line with PNNL’s primary business lines and are designed to enable the scientific programs and ensure mission readiness. Figure 1 below is a PNNL campus site plan depicting the planned facilities.



**Figure 1.** PNNL’s future campus – FY 2015 timeframe

The most significant driver for PNNL facilities and infrastructure investments is the need to house capabilities being displaced by the accelerated cleanup of the Hanford Site 300 Area. In September 2004, Mission Need (Critical Decision (CD)-0) for the CRL project was approved by DOE, and in February 2005, this mission need was revalidated. In December 2006, a conceptual design revision (CD-1 Revised) was approved by DOE that consisted of retaining and upgrading certain key facilities in the 300 Area, constructing replacement facilities south of the existing 300 Area on the PNNL site, and constructing two third-party facilities on private land, the Biological Sciences Facility (BSF) and the Computational Sciences Facility (CSF). In July 2007, DOE approved CD-3a allowing start of site work, foundations, and structural steel for the Physical Sciences Facility (PSF), the line item part of the CRL Project. CD-3b approval is expected in April 2008 to allow the balance of the facility construction to begin. The PSF Line Item is considered PNNL’s initial SLI Initiative project.

As shown in the attached FY 2010 IFI Crosscut (Schedule 19), the \$224 million line item funding for the PSF project consists of \$98 million from DOE-SC, \$70 million from National Nuclear Security Administration (NNSA), and \$56 million from Department of Homeland Security (DHS). This funding supports constructing the PSF on the Horn Rapids Triangle and life extension for the existing 325 Building (the Radiochemical Processing Laboratory). Life extension for the other retained 300 Area facilities will be accomplished through \$5 million total of Laboratory GPP and additional PNNL funding sources, such as IGPP and overhead investments. Investment from other sources includes \$5 million from the State of Washington for utility systems infrastructure for the Horn Rapids Triangle, \$12 million from DOE-EM to support utility system infrastructure for the 300 Area, and about a \$30 million investment from PNNL through laboratory overhead for transition and relocation. Additional CRL information can be found at <http://www.pnl.gov/rcf/index.stm>.

The proposed Physical Sciences Facility, a 201,000-square-foot facility complex, will consist of three main buildings, one for each of the following research capabilities: materials science and technology, radiation detection, and ultra low-level analysis. As the primary replacement facility for the 300 Area, PNNL broke ground on the PSF in the fourth quarter of FY 2007, with expected completion and full start of operations planned during the second quarter of FY 2011. The BSF and CSF, connected by a common entrance, will contain about 74,000 square feet, each, privately funded and constructed on Battelle land near the center of the PNNL campus. Groundbreaking of both facilities is expected by the end of FY 2008. The BSF will house systems biology capabilities and the CSF will host information analytics capabilities, computer laboratories, and electronic and instrumentation laboratories.

In summary, the CRL actions represent the top priority for PNNL and will allow the Laboratory to exit over 350,000 gsf of aging infrastructure on the Hanford Site 300 Area. Nearly 150,000 gsf of this has been exited to date, with the remainder (the non-retained facilities) to be exited by FY 2011.

## **Environmental Molecular Sciences Laboratory Investments**

The EMSL is the centerpiece of the PNNL research campus as a 224,000 gsf national scientific user facility with advanced resources for fundamental research on physical, chemical, and biological processes. EMSL, built in 1997, houses state-of-the-art research equipment, including a new high-performance supercomputer and a 900-Mhz, high-field nuclear magnetic resonance spectrometer, as well as mass spectrometry and surface-science instruments. EMSL-specific facility and infrastructure additions and enhancements are funded via programmatic line item or programmatic GPP dependent on the project funding level and are listed below.

- ***EMSL Radiological Annex*** (Programmatic GPP). The EMSL Radiological Annex addition will support enhanced research and radiological actinide capabilities. A complement of EMSL's unique research capabilities will be housed in the Annex. The Annex is planned to be physically separate from the EMSL facility, thus isolating radiological activities, and relying on the main EMSL facility only for such things as compressed air, nitrogen, and electrical power. This building is being proposed as a \$4.9 million facility with an expected completion date of FY 2010.
- ***South Electrical Plant*** (Programmatic GPP). The south electrical plant will support the current and future supercomputer capabilities within the EMSL. The existing north plant is fully utilized both in utilities and space. The major need for power and cooling is driven by the existing and future computer facility. Placement of this additional plant next to the computing facility will reduce costs of running utilities from the north end of the building to the south end. This \$4.9 million building is expected to be constructed by the end of FY 2011. Additionally, this project is in conjunction with the planned PNNL campus electrical infrastructure enhancement with the City of Richland.
- ***Computer Room Addition*** (Programmatic GPP). The computer room addition will support the next generation supercomputer, High Performance Computing System-4 (HPCS-4). The future space will lend itself to next-generation technologies of condensed computer arrangements with proper cooling and short-run cable connections; the existing space will be used for other computer housing. The expansion is planned for FY 2012 and is also expected to be a \$4.9 million project.
- ***EMSL Laboratory and Office Space Additions (North Lab/Office Expansion)*** (Line Item). As new, high spatial resolution imaging capabilities are developed and brought on line, we foresee a need for currently unavailable laboratory space with much tighter controls on vibration, electromagnetic

isolation and thermal variances. The current concept is construction of two laboratory modules on the north end of the building with an accompanying office pod extending east. As shown in the attached IFI Budget Crosscut (Appendix C), this is estimated as a 55,000 gsf addition and has been shown to be initiated in FY 2012 with completion in FY 2014. In addition to the line item funding, the Office of Biological and Environmental Research is expected to provide programmatic GPP funds specific to the EMSL facility.

## **General PNNL Campus Facilities and Infrastructure Investments**

Beyond the CRL and EMSL, PNNL has planned multiple other facility and infrastructure actions using various types of funding sources including IGPP to support and enhance the overall PNNL operations. With FY 2008 representing the final year of landlord GPP funding, PNNL will fund capital facility and infrastructure investment needs of a general nature and project value of less than \$5 million using IGPP from FY 2009 forward. Below are the planned actions over the next five years.

- ***System Development Laboratory (SDL)*** (SDL). As part of the SLI Initiative, PNNL has proposed the construction of the \$99 million System Development Laboratory. The SDL will be roughly a 100,000 to 150,000 gsf facility initiated in FY 2013 and completed in FY 2015. This laboratory replaces aging leased facilities that are inadequate for future research programs and are distant from the main campus with new large instrument/system laboratory space and appropriate office space. Two leased facilities, 2400 Stevens and APEL, currently house laboratory space that supports PNNL capabilities in sensing and measurement technology and chemistry and process science. These facilities support multiple program elements including energy security (solid oxide fuel cells, power grid technology), national and homeland security (remote sensing), and science innovation (the Atmospheric Radiation Measurement Program). 2400 Stevens is a 95,351 gsf facility, originally a warehouse that was converted to contain primarily dry laboratory space and offices and is located several miles from the main campus. The APEL facility was designed as entrepreneurial space for start-up companies, and it was intended that PNNL occupy no more than 50% of the space. PNNL currently occupies over three-quarters of the total facility.
- ***PNNL Machine Shop (located at EMSL)*** (IGPP). The machine shop located within the EMSL facility supports the entire PNNL campus and is in need of an expansion. This modification would provide a new 6,000 square foot building adjacent and connected to EMSL with proper facilities for the shop, which will empty the current shop spaces (EMSL 1341, 1341A, and 1341B) and make them available for conversion to laboratory spaces.
- ***Utilities, Roads, and Grounds*** (IGPP, laboratory overheads). Over the next five to ten years, the PNNL campus will change significantly with the arrival of multiple new facilities. New buildings will be accompanied by the need for upgraded infrastructure including roads, parking lots, utility systems, and telecommunications. With owner, operator, and maintainer of the utilities infrastructure being both DOE and the City of Richland, multiple funding sources are required to provide an overall integrated system. PNNL is planning on investing up to \$15 million over the next 10 years (FY 2009 through FY 2018) in IGPP funds and laboratory overhead funds related to various infrastructure projects. Initial plans include upgraded electrical infrastructure with the City of Richland and service roads and parking lot additions on the PNNL campus south of Horn Rapids Road. Additionally, the utility systems and grounds and infrastructure in the 300 Area around the retained facilities will be improved via IGPP and CRL funding. Lastly, the leased facilities portion of the PNNL campus will

undergo improvements and enhancements via the lease agreements with the various building owners to the extent appropriate and reasonable.

- **Maintenance Investment Plan** (Multiple funding sources). PNNL implements an integrated approach to facilities and infrastructure maintenance investment planning which recognizes the multi-ownership of land and buildings and combines component based maintenance forecasting with real time condition and performance data. The goal of this plan is to assure that facilities and infrastructure are maintained ready to support the missions of PNNL across their life cycle.

In line with the DOE-SC Annual Laboratory Plan guidance, DOE-SC-only facilities are the basis of the various F&I data and information provided in the tables in this section. For PNNL, EMSL is currently the only DOE-SC facility. The PNNL deferred maintenance total in FY 2008 for EMSL was \$41 K. The EMSL facility is the newest DOE-owned facility in the PNNL portfolio and has been maintained such that deferred maintenance has been minimized and the facility has continually operated with a high degree of reliability. This building is categorized as “Mission Critical” and its condition is currently rated “Excellent.” Deferred maintenance for the EMSL facility is expected to continue to be minimal. The CRL project will replace or upgrade other DOE owned facilities and through the implementation of the PNNL maintenance plan via IGPP and overhead funding sources similar performance of these assets will be maintained.

In addition to these planned actions, the BSEL, a multipurpose, third-party leased facility built to support research and development for bio-based product manufacturing, is complete and in transition to full operation. The BSEL is located on the WSU Tri-Cities campus, approximately one mile south of the main campus of PNNL. Also, PNNL is proceeding with the Nanomaterials Synthesis Laboratory (NSL), an approved landlord GPP project. The NSL is a stand-alone research facility that will provide nearly 6,000 net square feet of wet chemistry laboratory space. It will be strategically located southwest of EMSL, directly east of the new BSF, and built on DOE-owned land. Construction of this facility is expected to be completed and in full operations during FY 2010.

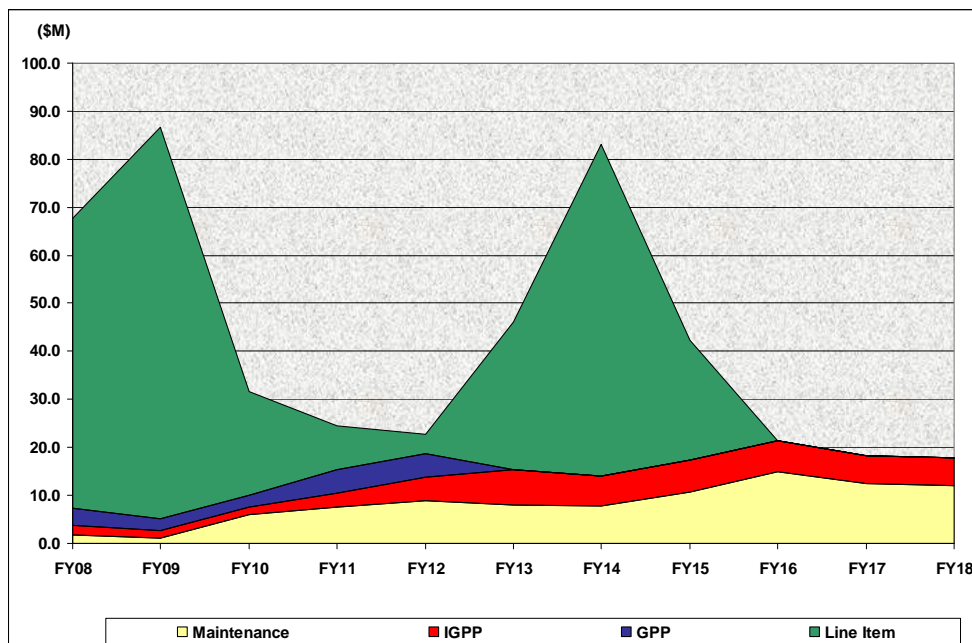
## **Trends and Metrics**

EMSL maintenance investments through March 2008 are on budget and within projected parameters of the FY 2008 PEMP goals. Table 2 and Figure 2 below represent investments planned for the current and future DOE-SC facilities as presented in the FY 2010 IFI Crosscut, Schedule 19.



**Table 3.** PNNL’s DOE-SC Facilities and Infrastructure Investments (\$M) – Impact to Asset Condition Index

\$M	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Maintenance	1.8	1.2	6.1	7.5	8.8	8.1	7.8	10.6	15.0	12.5	12.1
DMR	-	-	-	-	-	-	-	-	-	-	-
Excess Facility Deposition											
IGPP	2.0	1.5	1.5	3.0	5.0	7.2	6.3	6.7	6.3	5.8	6.8
GPP (FY08 – Lab, FY09 & beyond-Prog.)	3.5	2.5	2.4	4.9	4.9	-	-	-	-	-	-
Line Item (SLI & Prog.)	60.4	81.5	21.6	9.0	4.0	30.8	69.0	25.0	-	-	-
<b>Total Investment</b>	<b>67.7</b>	<b>86.7</b>	<b>31.6</b>	<b>24.4</b>	<b>22.7</b>	<b>46.1</b>	<b>83.1</b>	<b>42.3</b>	<b>21.3</b>	<b>18.3</b>	<b>18.9</b>
Estimated Replacement Value (SC Only)	69.7	89.6	97.1	328.3	340.9	348.7	386.8	494.7	506.0	517.7	529.6
Estimated Deferred Maintenance (SC Only)	-	-	-	-	-	-	-	-	-	-	-
Asset Condition Index (ACI) for Planning Purposes (SC Only)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00



**Figure 2.** PNNL’s Facilities and Infrastructure Investments

## 1.1 Sustainability

The sustainability approach to operations, maintenance, and fleet management, is consistent for all facilities. PNNL will meet the requirements of DOE Order 430.2.B, Departmental Energy, Renewable Energy, Transportation Management, and Executive Order 13423, Strengthening Federal, Environmental, Energy And Transportation Management, by the scheduled milestone dates. The sustainable approach to achieving and sustaining the Transformational Energy Action Management goals will be accomplished through a combination of implementation of an Energy Savings Performance Contract, line item funding, IGPP, and overhead funds. Starting in FY 2008, new construction projects and major renovations in excess of \$5 million will be Leadership in Energy and Environmental Design gold certified. New and renewal of existing leases will contain provisions that factor in the five guiding principles referenced in the DOE and Executive Order.

Fleet Management will meet the annual gasoline usage reduction goals by converting gasoline vehicles, where applicable, to alternative fuel vehicles, requesting plug-in electric and hybrid vehicles, and reducing miles through consolidation of trips and right sizing our fleet where possible.

Our goal is to meet and exceed the goals in the DOE and Executive Order each year. The specific methods and approach to meet the goals will be included in the Executable Plan, which will be complete by September 30, 2008.

Table 3 that includes some specific goals contained in DOE Order 430.2B. PNNL planned projects, funding source(s), and dates of the fiscal year they will be completed/implemented in to achieve the goals are also included.

**Table 4.** PNNL’s Progress on DOE Order 430.2B Goals

DOE Order 430.2B Goals					
Requirement	Goal	Funding Source	Cost	Milestone	Progress to Date/comments
Energy Reduction of 30%	10%	ESPC	\$4.55M	FY 2009	Planned to begin the project in 1 <sup>st</sup> quarter FY 2009.
	12%	OH	\$56K	FY 2008	Reduction achieved in FY 2008 from Green Power Credit. This reduction may be less in future years.
	08%	OH	\$3M	FY 2011	Primarily HVAC enhancements for BSF & CSF leased facilities to begin in FY 2009/FY 2010.
Renewable Energy Onsite	TBD	TBD	TBD	FY 2015	NREL study in progress to evaluate the cost effectiveness of this strategy at our site.
Renewable Energy Off-Site	12%	OH	\$56K	FY 2008	Green power purchases from utilities in FY 2008. This may be reduced in future years.
Water Reduction	5%	OH/IGPP	\$100K	FY 2009	O&M water fixture retrofit project to be initiated in FY 2009.
	5%	OH	\$50K	FY 2010	O&M water fixture retrofits
	6%	TBD	TBD	FY 2015	
Sustainment	15%	OH	\$75K	FY 2010	Results from energy audits of facility square footage and planned actions.

**Appendix A**  
**PNNL Land Use Plan**

## Appendix A

### Land Use Plan

As described in DOE Order 430.1, *Real Property Asset Management*, site planning for real property assets must be consistent with DOE P 430.1b, *Land and Facility Use Planning* and must be based on accepted planning principles and industry-wide practices. The planning process must include all forms of activity that may affect real property including acquisition, development, utilization, maintenance, recapitalization, and disposition. Real property plans also must be consistent with the yearly Integrated Facilities and Infrastructure (IFI) Crosscut Budget in support of program missions and growth.

In total, DOE operates the Hanford Site, a 580-square-mile site north of Richland, Washington. The Pacific Northwest Site Office (PNSO) has responsibility for PNNL and the PNNL campus. The PNNL campus consists of buildings on the Hanford Site (principally in Hanford's 300 Area), buildings on the DOE designated PNNL Site, buildings owned by Battelle on Battelle land, leased buildings on Battelle land, other leased buildings on third-party owned land, and multiple offsite locations.

The Hanford Site consists principally of multiple facilities in the 300 Area north of the City of Richland. These facilities will be reduced as a part of the CRL project to four main retained facilities along with supporting buildings. The 300 Area currently resides on DOE-EM land. In addition, there are a few facilities on the Hanford Site to the north of the 300 Area that PNNL operates in support of DOE-EM work.

PNSO has responsibility for the PNNL Site, a 350 acre parcel of land, that consists of 30 acres occupied by EMSL south of Horn Rapids Road, 100 acres of land north of Horn Rapids Road between Stevens Drive and George Washington Way, known as the Horn Rapids Triangle, and 220 acres between the north edge of the Horn Rapids Triangle and the south end at the 300 Area. The land south of Horn Rapids Road and the Horn Rapids Triangle (130 acres) is in the City of Richland. The Horn Rapids Triangle will be the home of the new Physical Sciences Facility. The 220 acres parcel was reassigned from DOE-EM to DOE-SC in FY 2007. PNSO/PNNL will assume operational and management responsibilities for the PNNL Site in accordance with approved March 2008 Operational Agreement between SC-PNSO and EM-RL.

Battelle owns 250 acres south of Horn Rapids Road within the City of Richland. Facilities on this land are both Battelle-owned and third-party leased facilities, and represent the campus core sector facilities as noted in PNNL's *Campus Master Plan*. The balance of the PNNL campus is on third-party-owned land stretching from south of Horn Rapids Road to various facilities to the farthest south part of the campus – 2400 Stevens building and recently completed Bioproducts, Sciences, and Engineering Laboratory (BSEL) facility. The PNNL campus is depicted in Figure A.1.

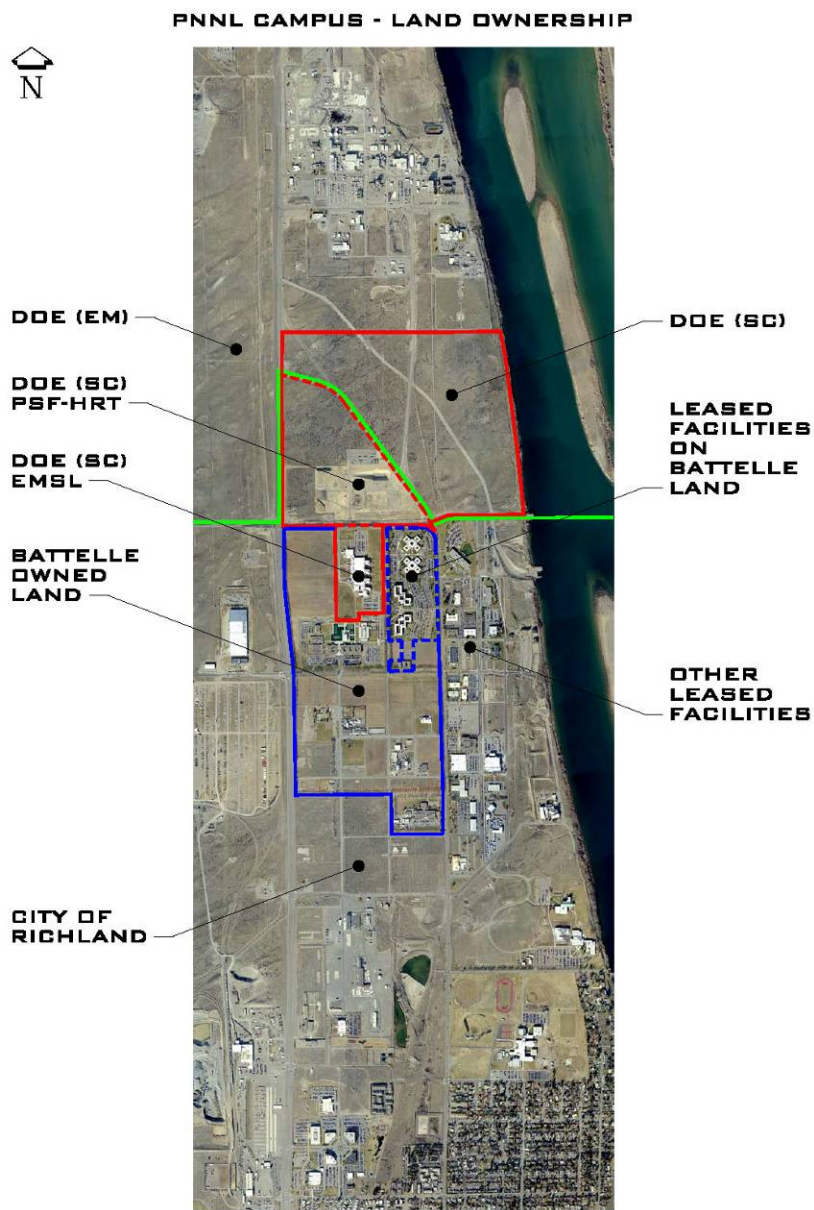
Even with these multiple locations, PNNL has established and continues to enhance the integration of the utility systems and infrastructure across the entire PNNL campus, addressing the ownership, provider, operator, and investment plans of each. PNNL's overall goal is to fully integrate the utility systems and infrastructure with, to the greatest extent possible, single owners and single providers/operators for each

system – providing long-term, highly reliable and effective (and low) life-cycle cost services. The attached PNNL campus site plan depicts these land attributes.

The PNNL campus primary utility systems and infrastructure of electrical, water and sewer, IT (phone/LAN), and natural gas systems are currently in various stages of enhancement. Expectation is that within 5 years they will be in a condition that will support both the current and next 5 to 10 years growth requirements. Specifically, the City of Richland’s Horn Rapids Triangle utility project that addresses most of the required utility systems and infrastructure will be completed this fiscal year and will include electrical, water and sewer, and communications. The City of Richland utility systems and infrastructure on the balance of the PNNL campus are to be upgraded over the next couple of fiscal years. Finally, the 300 Area utility project is planned to be completed by Washington Closure Hanford contractor by FY 2012 or sooner.

In addition, PNNL includes numerous offsite locations with the Marine Research Operations in Sequim, Washington, being the most significant. Others include offices at Washington, D.C.; Seattle, Washington; and Portland, Oregon.

Consistent with DOE P 430.1b guidance, PNNL, in conjunction with a third-party architect-engineer firm, developed the PNNL *Campus Master Plan Update*, July 2005. This master plan provides an analysis of the existing PNNL campus and recommendations to accommodate anticipated program growth over the next 20 years and beyond. It further recognizes an existing land use pattern and proposes to strengthen it in the development of the campus to strategically locate programmatic components of the growth.



**Figure A.1.** Aerial view of the PNNL campus showing land ownership.

## **Appendix B**

### **PNNL Facilities Listing Detail**

## PNNL Facilities Listing Detail - Grouped by Primary Business Line (April 2008)

<u>Strengthen Scientific Foundations for Innovation</u>						
Facility	Full Name	Financial Owner	Lease / Own	Gross Sq. Ft.	Condition	Business Lines
EMSL	Environmental Molecular Sciences Lab	DOE	Owned	224,463	Excellent	Strengthen Scientific Foundations for Innovation
331	Life Sciences Laboratory 1	DOE	Owned	115,127	Good	Strengthen Scientific Foundations for Innovation, Reduce Environmental Effects
LSL2	Life Sciences Laboratory 2	Battelle	Owned	16,118	Good	Strengthen Scientific Foundations for Innovation
ANNEX	RRC Laboratory Annex	Battelle	Owned	9,311	Good	Strengthen Scientific Foundations for Innovation
POP	Port Of Pasco	Contractor	Leased	10,000	Good	Strengthen Scientific Foundations for Innovation
JGCRI	Joint Global Change Research Institute	Contractor	Leased	12,346	Good	Strengthen Scientific Foundations for Innovation
				387,365		
<u>Increase U.S. Energy Capacity</u>						
2400STV	2400 Stevens Bldgs.	Contractor	Leased	96,759	Good	Increase U.S. Energy Capacity, Prevent and Counter Terrorism
BSEL	Bioproducts Sciences & Engineering Lab	Contractor	Leased	30,462	Excellent	Increase U.S. Energy Capacity, Reduce Environmental Effects
MATH	Mathematics Building	Battelle	Owned	29,416	Adequate	Increase U.S. Energy Capacity, Strengthen Scientific Foundations for Innovation
	Leased Bldgs. (Sigma2 & Portland)	Contractor	Leased	24,692	Good	Increase U.S. Energy Capacity
				181,329		
<u>Prevent and Counter Terrorism</u>						
NSB	National Security Building	Contractor	Leased	100,358	Excellent	Prevent and Counter Terrorism
ISB1	Information Sciences Building I	Contractor	Leased	50,200	Excellent	Prevent and Counter Terrorism
	Leased Bldgs. (SALK, Sigma4, Albq., Seattle)	Contractor	Leased	57,775	Good	Prevent and Counter Terrorism
361	Modular Equipment Shelter	DOE	Owned	384	Good	Prevent and Counter Terrorism
EDL	Engineering Development Laboratory	Battelle	Owned	16,071	Good	Prevent and Counter Terrorism
				224,788		
<u>Reduce Environmental Effects</u>						
APEL	Applied Processing Engineering Lab	Contractor	Leased	57,196	Good	Reduce Environmental Effects, Increase U.S. Energy Capacity
PSL	Physical Science Laboratory	Battelle	Owned	89,379	Good	Reduce Environmental Effects, Strengthen Scientific Foundations for Innovation, U.S. Energy Capacity
RTL520/540	Research Technology Laboratory	Battelle	Owned	56,968	Adequate/Good	Reduce Environmental Effects
	Various Battelle Bldgs. (CEL, PDLE/W, PGF's)	Battelle	Owned	17,308	Good	Reduce Environmental Effects
	Leased Bldgs. (Sigma5 & Port of Skamania)	Contractor	Leased	50,520	Good	Reduce Environmental Effects
				271,371		
<u>Reduce Environmental Effects/Prevent and Counter Terrorism</u>						
318	Radiological Calibrations Lab/Offices	DOE	Owned	40,694	Good/Adequate	Reduce Environmental Effects, Prevent and Counter Terrorism
325 - RPL	Radiochemical Processing Laboratory	DOE	Owned	144,820	Adequate	Reduce Environmental Effects, Prevent and Counter Terrorism
MSL-Sequim	Marine Sciences Laboratory Buildings	Battelle	Owned	42,783	Excellent - Good	Reduce Environmental Effects, Prevent and Counter Terrorism
MSL7	MSL Bldg. 7	Contractor	Leased	9,688	Good	Reduce Environmental Effects, Prevent and Counter Terrorism
SIGMA3	Office Building - SIGMA3	Contractor	Leased	20,090	Good	Reduce Environmental Effects, Prevent and Counter Terrorism
				258,075		

PNNL Facilities Listing Detail - Grouped by Primary Business Line (April 2008)

Facility	Full Name	Financial Owner	Lease / Own	Gross Sq. Ft.	Condition	Business Lines
	<b>Laboratory Operations</b>					
350	Plant Operations & Maintenance Facilities	DOE	Owned	26,742	Excellent - Poor	Laboratory Operations
RTL510-590	RTL support bldgs.	Battelle	Owned	15,358	Good/Adequate	Laboratory Operations
ROB	Research Operations Building	Battelle	Owned	69,586	Fair	Laboratory Operations
LSB	Laboratory Support Building	Contractor	Leased	83,921	Good	Laboratory Operations
747A	Whole Body Counter Lab/Office	Contractor	Leased	3,232	Good	Laboratory Operations
ISB2	Information Sciences Building II	Contractor	Leased	60,080	Excellent	Laboratory Operations
ETB	Environmental Technology Building	Contractor	Leased	100,358	Excellent	Laboratory Operations
GUESTHOUSE	Guest House at PNNL	Contractor	Leased	29,108	Excellent	Laboratory Operations
	Shipping, Receiving, Warehouse Bldgs.	Various		25,654	Excellent/Good	Laboratory Operations
	Met. Lab. & Other 600 Area Bldgs.	DOE	Owned	15,217	Excellent - Poor	Laboratory Operations
	Misc. Battelle Support Bldgs.	Battelle	Owned	26,805	Excellent - Adequate	Laboratory Operations
BWO	Battelle Washington Office Building	Contractor	Leased	11,097	Good	Laboratory Operations
CIC	Consolidated Information Center	Contractor	Leased	30,124	Good	Laboratory Operations
				497,282		

320	Analytical And Nuclear Research Lab	DOE	Owned	31,427	Transition	Exit - currently supports Prevent and Counter Terrorism
326	Material Science Laboratory	DOE	Owned	63,334	Transition	Exit - currently supports Prevent and Counter Terrorism
329	Chemical Science Laboratory	DOE	Owned	39,420	Transition	Exit - currently supports Prevent and Counter Terrorism
331 Bldgs.	Various 331 support bldgs. (331A,D,G,H,P)	DOE	Owned	11,313	Transition	Exit
336	High Bay Testing Facility	DOE	Owned	6,438	Transition	Exit
338	Prototype Engineering Laboratory	DOE	Owned	18,315	Transition	Exit
3730	Gamma Irradiation Facility	DOE	Owned	3,103	Transition	Exit
3760	3760 Office Building	DOE	Owned	21,908	Transition	Exit
				195,258		

<b>Totals</b>	<b>2,015,468</b>
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**Condition Definitions per FIMS.**  
 \* Excellent  
 \* Good  
 \* Adequate  
 \* Fair  
 \* Poor

B.3



B.1