

FACILITIES PLAN TECHNICAL REPORTS

Sustainability

November 2017

In partnership with:



INTRODUCTION

Sustainability is at the heart of our work at Portland Community College and is identified as a core theme of the college mission and strategic plan.

In 2006, the college president signed onto the American College and Universities Presidents' Climate Commitment. Shortly after in 2007, the Board of Directors adopted a policy on Sustainable Use of Resources and formed an advisory council to develop and implement the college's Climate Action Plan and lead sustainability efforts. This Sustainability Leadership Council has cross-district representation and leads sustainability initiatives in alignment with the Climate Action Plan, which outlines greenhouse gas reduction targets, with goals for sub-committees working on specific scopes of emissions as well as education and outreach. Students have also led the charge at PCC and developed a Green Initiative Fund in 2008, which has provided over one million dollars in funding to projects like learning gardens and bike rental programs. Sustainability at PCC has continued to grow and the college is well on its way to meeting and surpassing many of the Climate Action Plan goals.

This Sustainability Plan will build on the college's momentum and many achievements



Earth-day 2016 Work Party at the Rock Creek Learning Garden Celebrating 10th Anniversary

Awards

The college's leadership in sustainability has resulted in numerous awards recognition:

- PCC Rock Creek Learning Garden received the Association for the Advancement of Sustainability in Higher Education (AASHE) 2015 Sustainability Award for addressing food insecurity among students.
- The college's program was featured for its sustainability efforts in Sustainable Business Oregon.
- PCC was the 4th college nationwide to become Bee Campus USA certified and is also Tree Campus USA certified.
- The College has been recognized by AASHE and Princeton Review for measuring and reducing Scope III emissions.
- PCC was a recipient of the international APPA Award for Excellence in Sustainability in 2016.
- The College was awarded the 2017 Climate Leadership Award from Second Nature and the US Green Building Council.
- And PCC was recognized in the 2017 AASHE Sustainable Campus Index for

Considerations

For the Facilities Masterplan the sustainability work group was tasked with creating an updated Sustainability Plan that evaluated PCC's current systems. The work group was also tasked with providing guidelines for sustainable design practices in six key areas and to provide recommendations on what goals the College should focus on in the future. The six topic areas the group focused on are:

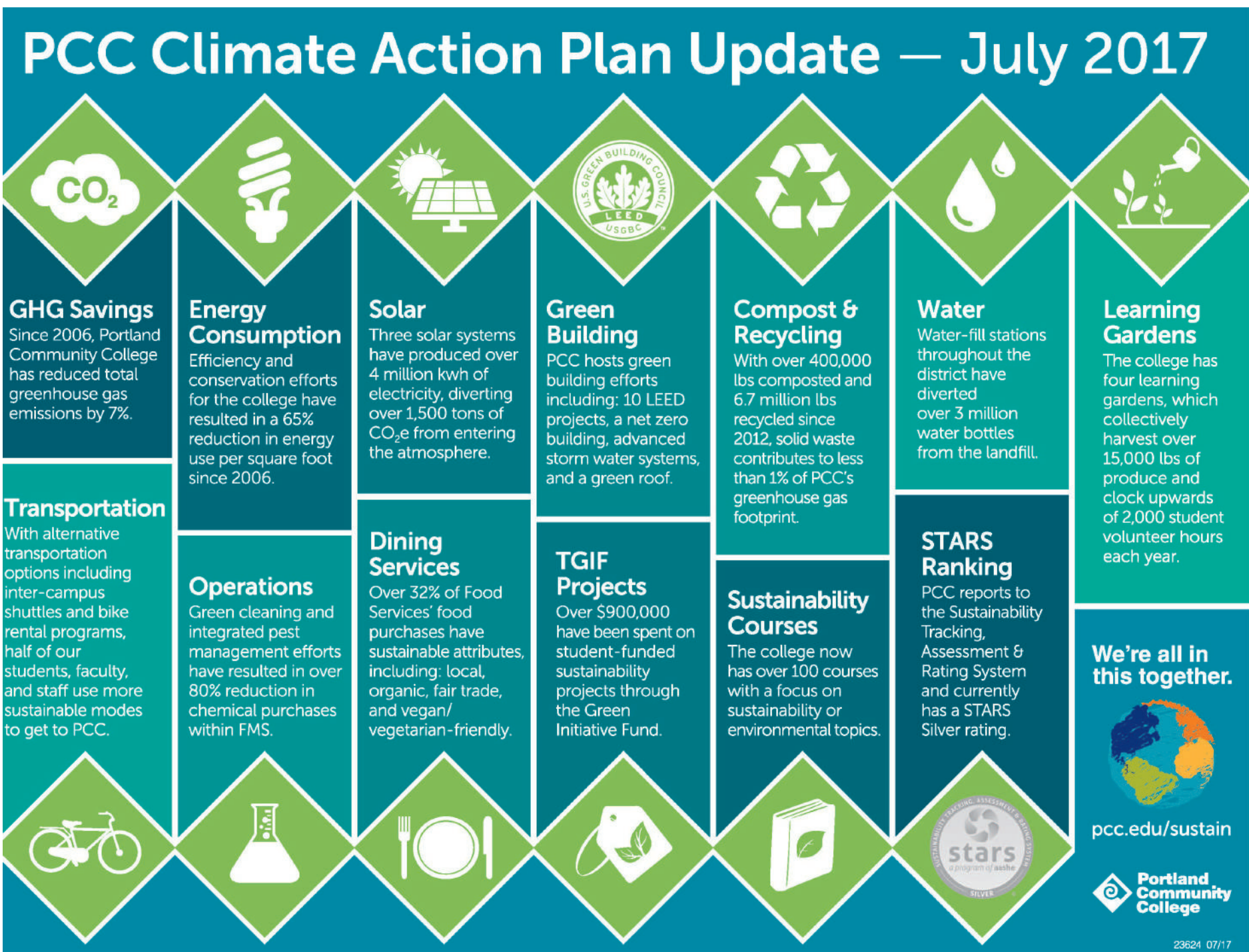
- College Operations
- Education and Culture
- Energy and Emissions

The attached Sustainability Plan was organized in sections around these six topics or areas of focus, with each section containing the following subsection(s):

- **Brief overview:** This subsection focuses on how and why the category is important and provides context for why the category was included as part of the Sustainability Plan.
- **How we live our commitment:** This subsection focuses on PCC's current commitments in each topic area and contains links to PCC's policies and practices.
- **Mandates:** This subsection contains links to legal regulations or requirements at the local, state or national level relevant to the topic area, when applicable.
- **Standards:** This subsection provides links to relevant operational standards in order to facilitate alignment across the College, ensuring a consistent approach is implemented. This section includes Board-approved policies or President/Cabinet/ Department leadership-sanctioned practices or procedures.
- **Goals:** This subsection articulates college-wide goals for each topic area. Where applicable, the goal contains a specific target and a time frame.
- **Recommendations:** This subsection contains statements of recommendations for best practices in the topic area. The recommendations are intended to be measurable and specific whenever possible and are intended to clearly connect to the topic goals, standards and/or mandates.



Facilities Director Tony Ichsan, College President Mark Mitsui, Rock Creek Campus President Sandra Fowler-Hill and Sustainability Manager Briar Schoon accept the 2017 Climate Leadership Award for two-year institutions from Second Nature and the U.S. Greenbuilding Council.



PCC's Climate Action Plan is a comprehensive report outlining how the college intends to reduce its greenhouse gas emissions. Portland Community College's first Climate Action Plan was signed by the college in 2009. This version, updated in 2017, summarizes the College's current programs and achievements.

PCC received one extra point for Exemplary practice and 3 points for Innovation and Leadership. More information about the specifics of the college's score can be found at <https://stars.aashe.org/institutions/portland-community-college-or/report/2017-06-30/>.

RESULTS

Sustainability-related goals and commitments from similar institutions, such as Lane Community College and the California Community Colleges, were reviewed to help understand what other campuses were doing. Because PCC is unique among community colleges (both because of its size and the depth of its efforts in sustainability) the task group also reviewed state and national four-year institutions of higher education, including the University of Oregon, University of Colorado, University of Texas - Austin, and Texas A & M, and known leaders in Higher Education for Sustainability, such as Harvard and Boston College, as well as applicable policies from the City of Portland, the State of Oregon and the Oregon Military Department. The task group also reviewed standards for sustainable design, including LEED (Leadership in Energy and Environmental Design), the Living Building Challenge, the Well Building Standard and others.

Next, the task group ranked each recommendation on a scale of 1 to 5 (with 1 being high and 5 being low) on how each recommendation helps PCC to optimize resource efficiency, promote equity, reduce GHG emissions, provide a positive impact on wellness and improve staff experience or support education. The ranking was informed by feedback from the Sustainability Leadership Council. Finally, the task group provided a rough order of magnitude cost to implement for each measure, looking at total impact, capital cost, ongoing cost and cost/benefit.

As part of the work of the Sustainability work group, PCC compared itself to eight institutions considered to be highly sustainable: Harvard University, Boston College, the College of Saint Benedict, the University of Colorado: Colorado Springs, the University of Texas: Austin, Texas A & M, Citrus College and Lane Community College. Of these institutions, only Harvard University consistently had more programs in place in the six categories analyzed.

The purpose of this comparison was to not only understand PCC's position compared to these institutions, but also to provide information on potential goals PCC might want to consider. The Group also looked at how PCC compared to similar entities in the State of Oregon, similar-sized institutions in terms of student enrollment, other

tracking system to evaluate PCC's performance. The Sustainability Tracking, Assessment and Rating System (STARS) was used to provide information on PCC's performance in sustainability. STARS is a transparent, self-reporting framework for colleges and universities to measure their sustainability performance. PCC ranks third among reporting associate colleges on AASHE and has an overall STARS rating of 61.96, which is a silver rating. (The submission date was Jun 17, 2017.) The rating looks at five categories of information: Academics, Engagement, Operations, Planning & Administration, and Leadership & Innovation.

ACADEMICS

PCC scored 19.63 out of 35 in Curriculum, with the highest rating in the category of Campus as a Living Laboratory. Two categories, Graduate Programs and Immersive Experience, were not applicable to PCC as an undergraduate community college. Research, the other main heading in the curriculum category, was also not applicable given the school's mission and focus.

ENGAGEMENT

PCC scored very highly in Campus Engagement receiving a 19.25 out of possible 21 in this area. Of the nine subcategories in this section, PCC received perfect scores for 7 subcategories. PCC did not score as highly in Public Engagement, with Community Services an area to consider for improvement.

OPERATIONS

From an operations perspective, PCC scores the highest in water with a 2.0 out of 2.0 in Rainwater Management and a 2.67 out of 4.0 in Water Use. The next highest-scoring category is Grounds, where PCC scores a 3.0 out of 4.0, while achieving a perfect score in the Biodiversity subcategory. Next highest is Air and Climate which scores 6.75 out of 11, based largely on the college's Greenhouse Gas Emissions work. Purchasing, Energy, Buildings, and Transportation all score above 50% in their respective categories. The lowest scoring category is Food & Dining.

PLANNING & ADMINISTRATION

In the Planning and Administration category, PCC scores highest in Coordination & Planning, followed by Diversity & Affordability.

LEADERSHIP & INNOVATION

COLLEGE OPERATIONS

Overview:
PCC aims to have a restorative impact on the surrounding environment and our community of students, faculty and staff by developing and operating all of our centers and campuses to conserve resources, reduce pollution and enhance personal well-being.

How we live our commitment:
The College promotes sustainable operations through a number of innovative practices. More than half of commuters now use alternative transportation, such as inter-campus shuttles and subsidized bus passes. PCC is a founding member of the Sustainable Purchasing Leadership Council and is the only community college which sits on the Founder’s Circle. PCC’s leadership in sustainable purchasing efforts emphasizes responsible, reusable and recycled products, such as bottle-filler stations and a reusable food container program.

Dining Services offers local, organic, Fair Trade and vegetarian/vegan food options. Sustainable options make up over 30% of Dining Services purchases. Dining Services utilizes produce grown in the Rock Creek learning garden and reduces waste by collecting food scraps for compost in the kitchen. With efforts like this closed loop system at Rock Creek, solid waste now contributes to less than 1% of the GHG footprint.

Facilities Management has reduced chemical usage over 70% by replacing general cleaners with ionized tap water and practicing integrated pest management, practices that benefit facility users and custodial staff alike.

- Standards:**
- Oregon Community College Rules of Procurement (CCR 102.4)
 - Portland Community College Solid Waste Management Policy.
 - Portland Community College Facilities Standards
- Mandates:**
- Integrated Pest Management Program



1 EXAMPLE OF POWER SHIFT PROGRAM 2 ELECTRIC POWERED CAMPUS BIKE 3 SOLAR CHARGING UMBRELLAS at CASCADE 4 POPPIE the PANTHER WITH A REUSABLE TO GO CONTAINER

College Operations Goals:

Ensure best practices for managing buildings in a sustainable and energy efficient manner in order to assist the facilities team in meeting sustainability-related goals, standards and commitments.

Integrate a culture of sustainability into all aspects of college operations.

Recommendations:

DISTRICT LEVEL

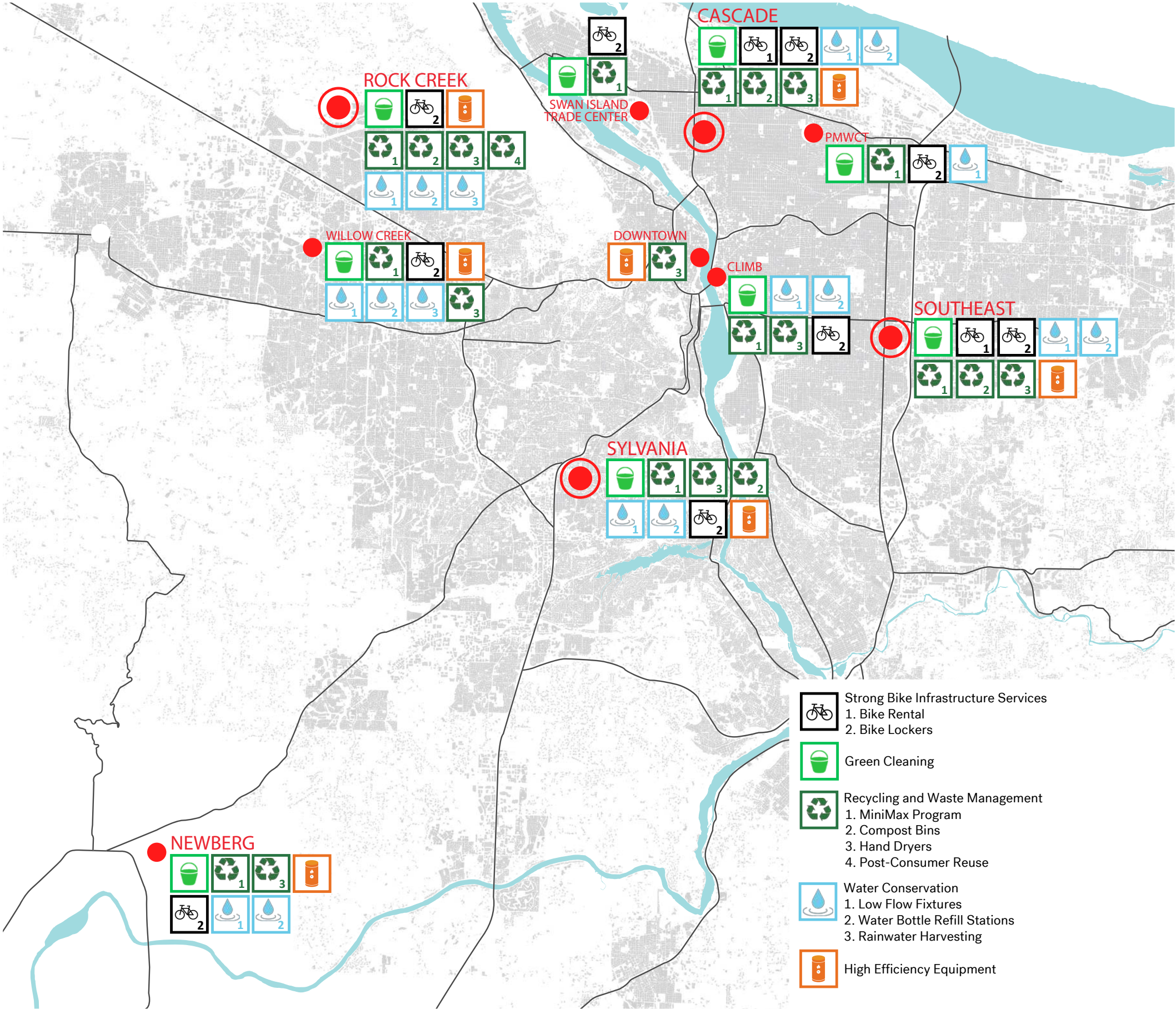
- Create a culture that allows for a reduction in commuting through teleconferencing, working from home, flex hours, etc.
- Develop standard protocols for shutting down computers and remote turnoff.
- Provide an affordable durable dishes option in catering and explore options to reduce disposable use in the cafeteria.
- Create Craigslist-like system internal to the college for Central Distribution Services (e.g., Campus Wall, Warp It).
- Increase preventative purchasing & reuse options, like hand dryers, lotus pro, OZZI, etc.
- Develop sustainable purchasing criteria for major product/ service areas.
- Develop best management practices for fleet usage; such as no idling.
- Require major vendors to report progress in meeting PCC’s sustainability goals and demonstrate their commitment to sustainability in their operational practices/leasing policy.

CAMPUS LEVEL

- Finalize a contract between the Rock Creek Learning Garden and Dining Services regarding purchasing that allows for increased integration of garden produce into menu items and catering.
- Work with IT to establish trainings for teleconference technology.
- Establish recycling technician positions at each campus.
- Develop an accurate inventory of motors, valves, variable frequency drives, etc., for maintenance.
- Work with IT to develop an updated batching procedure that is energy-efficient.

BUILDING LEVEL

- Reduce personal appliances and electronics in offices.
- Continue to remove or retrofit to reduce high-mercury lamps; transition to newer technology (LED)



EDUCATION AND CULTURE

Overview:
Harnessing the power of collaboration and integrated knowledge across disciplines leads to more powerful and effective solutions to our most pressing problems. Experts agree that a culture of learning is important for human growth and development. When colleges have a culture based on student success, faculty and staff consistently invent ways to improve student outcomes. Embracing a triple bottom line approach as an integral part of our academic work and institutional culture helps to also make it part of our daily lives and creates a generation of environmental leaders with the insight and foresight to safeguard our environment for years to come.

How we live our commitment:
To streamline sustainability education, the Sustainable Practices and Resources for Curriculum (SPARC) Council developed seven Green Course Outcomes and delivers annual training workshops to promote sustainability in curricula. The college has over 100 sustainability-related courses and a Sustainability Focus Award for students. The college offers traditional academic offerings as well as leadership and work opportunities, such as internships or work study positions. Student Leadership offers sustainability positions such as co-op director, environmental justice coordinator, bike advocate, and bike coordinator. Community-based learning opportunities abound at all campuses and students can be engaged in earning service hours as well as learning skills related to areas such as alternative building with cob and working in our learning gardens. Over \$1,000,000 has been spent on student-funded sustainability programs through the Eco-Social Justice Fund including learning gardens, bike rentals, compost and natural-building projects.

PCC is a founding member of the Greater Portland Sustainability Education Network (GPSEN), a UNU-IAS Regional Center of Expertise on Education for Sustainable Development. GPSEN encourages collaborative partnerships to create a sustainable future through formal, non-formal and informal education, training and public awareness campaigns. The college further promotes sustainability culture by hosting and participating in annual events including Earth



1 GEODESIC GREENHOUSE DOME AT SOUTHEAST 2 WASTE REDUCTION DEMONSTRATION 3 BEE KEEPING CLASS AT ROCK CREEK APIARY 4 STORMWATER EDUCATION BOOTH AT CLIMB CENTER 5 SIGNAGE AT MULTICULTURAL GARDEN



Week, Northwest Earth Institutes Eco Challenge and the BikeMore Challenge. The college has co-hosted both the Advancement of Sustainability in Higher Education's Annual Conference and the Oregon Higher Education for Sustainability Conference.

Education and Culture Goals:

Use PCC's four campuses and eight centers as living laboratories to foster the next generation of sustainability solution practitioners.

Foster a culture that embraces sustainability as part of the college's academic work, guiding principles and institutional practices.

Recommendations:

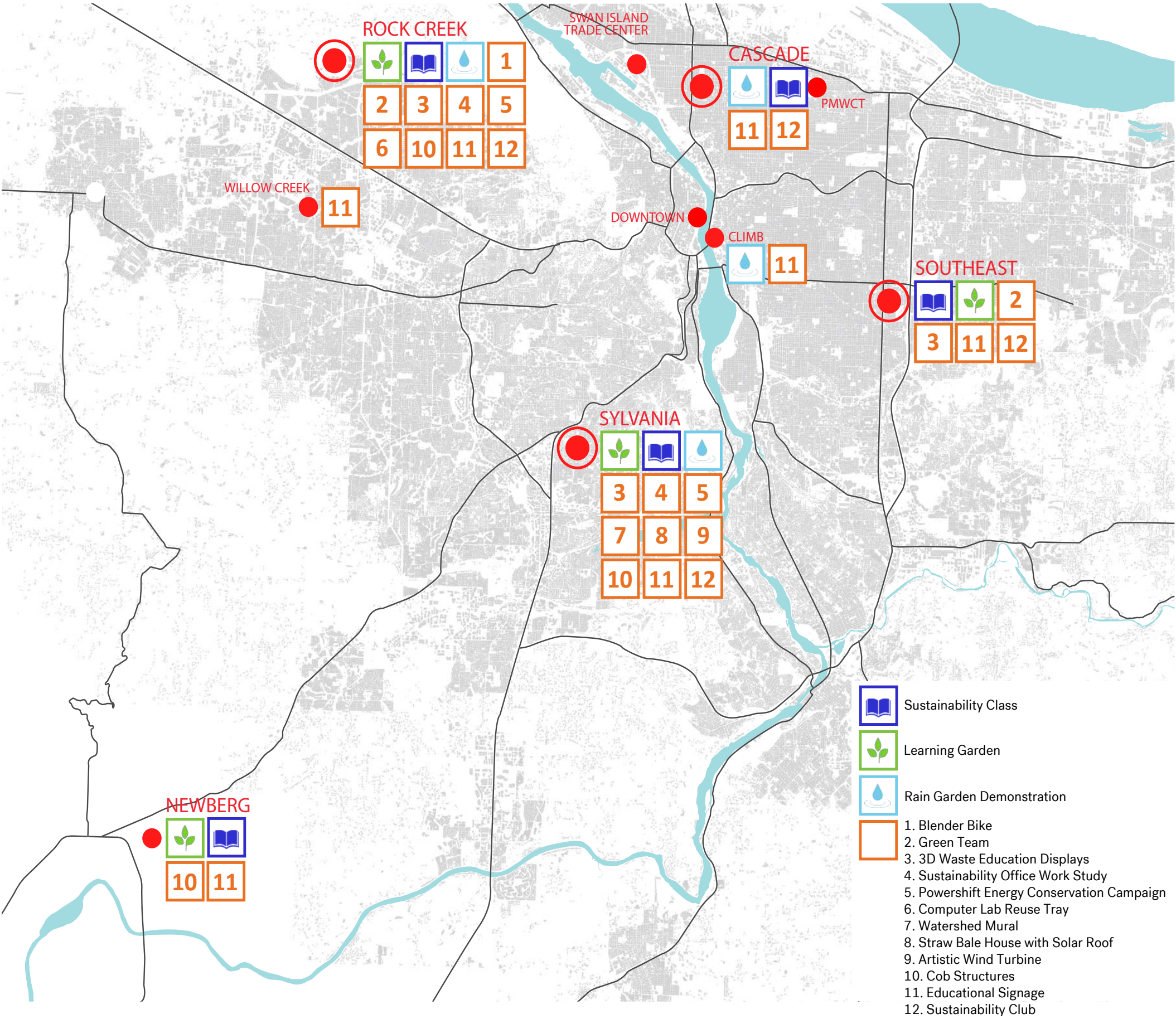
DISTRICT LEVEL

- Integrate sustainability into general education requirements.
- Facilitate strong governance structures to ensure integration of sustainability into all college practices.
- Foster a new generation of sustainability leaders by providing mentoring, networking and professional development opportunities.
- Recognize and reward sustainability accomplishments at an annual event.
- Develop connection with local renewable energy industry and technicians to boost PCC programs and create mentorships.
- Utilize Critical Race Theory as a lens to help inform decision making.
- Partner with Professional Organizational Development for annual sustainability trainings.
- Integrate social justice, equity and inclusion into all sustainability programming.
- Collaborate with the Office of Equity & Inclusion and resource centers on annual events.

CAMPUS LEVEL

- Increase participation in campus Green Teams or Green Office Program by 20%.
- Engage alumni at each campus to identify impact of sustainability programming at PCC.

There were no standards or mandates for this section.



ENERGY AND EMISSIONS

Overview:

Buildings consume nearly half of all the energy produced in the United States, according to the US Energy Information Administration, and are responsible for nearly half of CO₂ emissions. One key strategy to reduce and ultimately phase out CO₂ emissions produced by the building sector is to transform the way buildings are designed, built and operated. PCC has committed to the American College and Universities Presidents Climate Commitment and is creating a foundation for sustainability that will ensure consistent and lasting progress in this rapidly evolving field.

How we live our commitment:

In 2006, Portland Community College signed onto the American College and Universities Presidents' Climate Commitment. As part of this commitment, the College developed its first Climate Action Plan in 2009, which established aggressive greenhouse gas reduction targets and other sustainability goals. The Sustainability Leadership Council spearheads these efforts and updated the Climate Action Plan in 2013.

A major focus is reducing energy-related emissions through efficiency upgrades, green building principles, solar installations and occupant behavior change efforts. Such efforts have reduced energy consumption 65% per square foot below baseline 2006 levels. This exceeds the Climate Action Plan's 50% energy reduction goal. Three solar PV arrays have produced over 3 million kWh of electricity, diverting over 1,200 MT of CO₂ from entering the atmosphere. PCC is also a member of PGE's Clean Wind Program and continues to emphasize innovative energy conservation practices. PCC is enrolled in the Energy Trust of Oregon's Strategic Energy Management Initiative which has produced energy savings up to 34% at the Rock Creek campus alone. These efforts have helped the college reduce energy-related emissions by more than 30% since 2006 despite a 25% increase in gross square footage.

Standards:

- 2013 Climate Action Plan

Mandates:

None



1 SMART CAR PARKING ENFORCEMENT 2 BIKE PARKING 3 SOLAR FARM at ROCK CREEK 4 NEWBERG NET ZERO BUILDING 5 SOLAR ARRAY INSTALL

Energy and Emissions Goals:

Employ best practices in the design of new facilities and in building operations and maintenance to achieve a minimum of 30% energy savings above building code for all buildings.

Meet the college’s Climate Action Plan goal of a 40% reduction in GHG emissions by 2030 and an 80% reduction by 2050 below 2006 levels.

Recommendations:

DISTRICT LEVEL

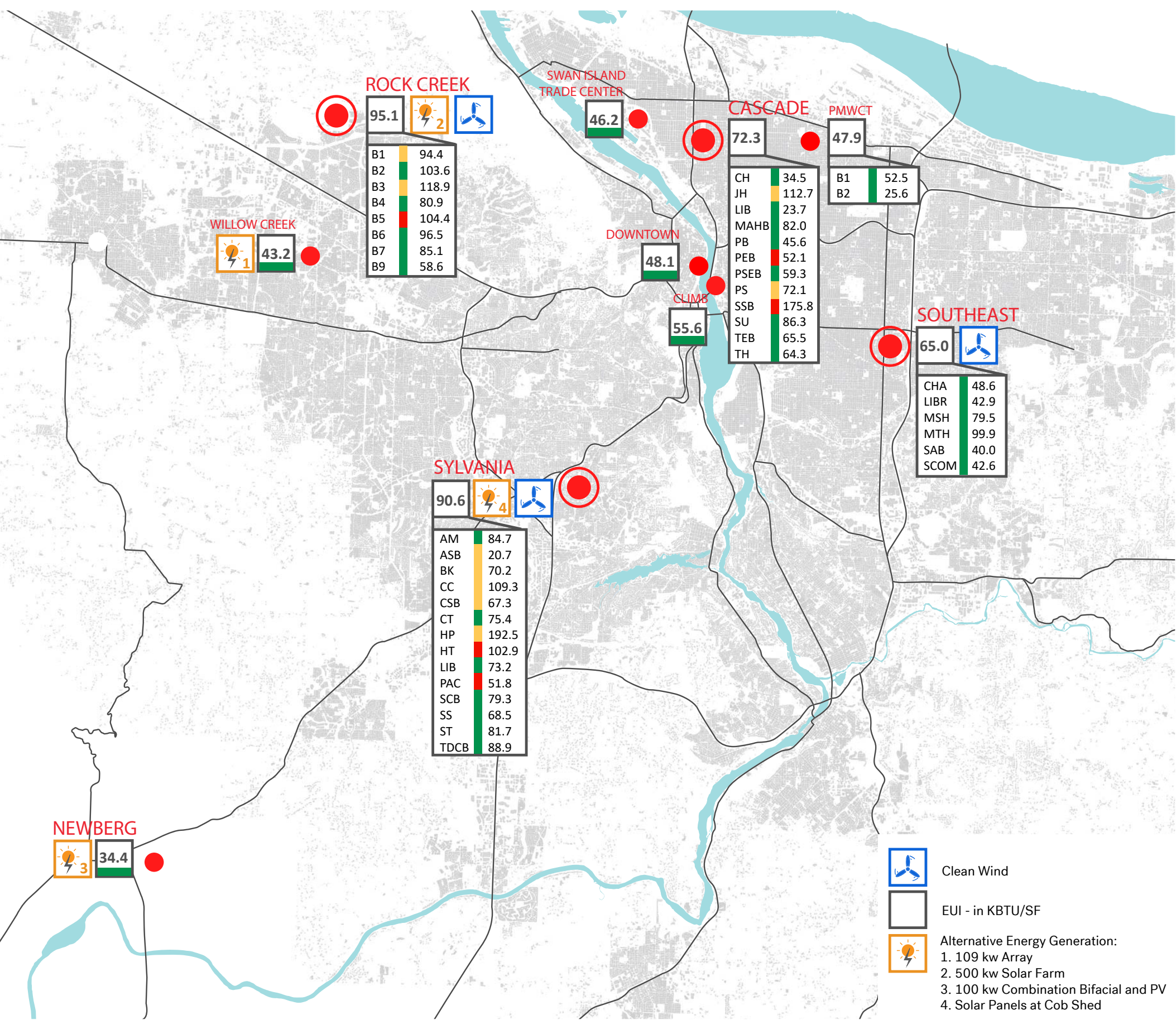
- Optimize scheduling of buildings on evenings, weekends, and summer by consolidating classes into fewer buildings and using more efficient buildings first.
- Expand temperature set points to promote energy efficiency, coupled with a behavior change campaign.
- Develop tighter mechanical standards, including standards for hot water heaters, boilers, etc.
- Set a goal for projects to be 30% more energy efficient than code and requiring commissioning on all projects.
- Require design teams working on renovation projects to present the business case for incorporating new energy efficient technology rather than replacing with a like system.

CAMPUS LEVEL

- Develop schedule for retro commissioning buildings on a campus-by-campus basis.
- Implement preventative maintenance plans to help keep equipment operating efficiently on a campus-by-campus basis.

BUILDINGS LEVEL

- Install occupancy sensors on electric lighting when upgrades occur and use those sensors to manage the buildings heating and cooling set points.
- Install daylight controls in existing buildings when upgraded.
- Add renewables to new projects over \$45 million in direct construction.



GROUNDS AND NATURAL SYSTEMS

Overview:
 PCC’s campuses are part of a larger, interconnected ecosystem, and the actions PCC takes have ripple effects throughout the natural environment. PCC will protect and enhance the ecosystems and green spaces the College owns, manages or impacts, in order to enhance regional biodiversity and personal well-being.

How we live our commitment:
 With an emphasis on best practices such as planting natives for ground cover, hand pulling and burning weeds, mulching and efficient watering the grounds department has reduced pesticide use by over 80%. In order to conserve resources, the grounds crew recycles all landscape debris that is either used for mulch or composted, and is moving away from turf in landscaping. The grounds crew maintains an ET-based computerized irrigation system, which uses real-time weather and climate data to ensure that water used for irrigation replaces the volume of water lost through evapo-transpiration and avoids using water unnecessarily. Irrigation occurs in the morning and evening to minimize water loss through evaporation.

Native and drought-resistant plants, which require less water, are being introduced on campus in the landscaping around new buildings. Campus grounds also promote bee- and pollinator-friendly habitats with wildflower plantings throughout the district, which helped PCC become the fourth college to be certified as a Bee Campus USA. The College is also Tree Campus USA certified and collaborates with multiple academic departments to supplement curriculum with hands-on learning in the natural environment.

- Standards:**
 - Tree Campus USA
 - Bee Campus USA
 - PCC Integrated Pest Management Plan

- Mandates:**
 - City of Portland Tree Policy
 - City of Portland Stormwater Requirements



- State of Oregon IPM in Schools Requirement

Grounds and Natural Systems Goal:
 Promote healthy, toxic-free, resource efficient and aesthetically pleasing landscapes that encourage native landscapes, a sense of place and outdoor learning.

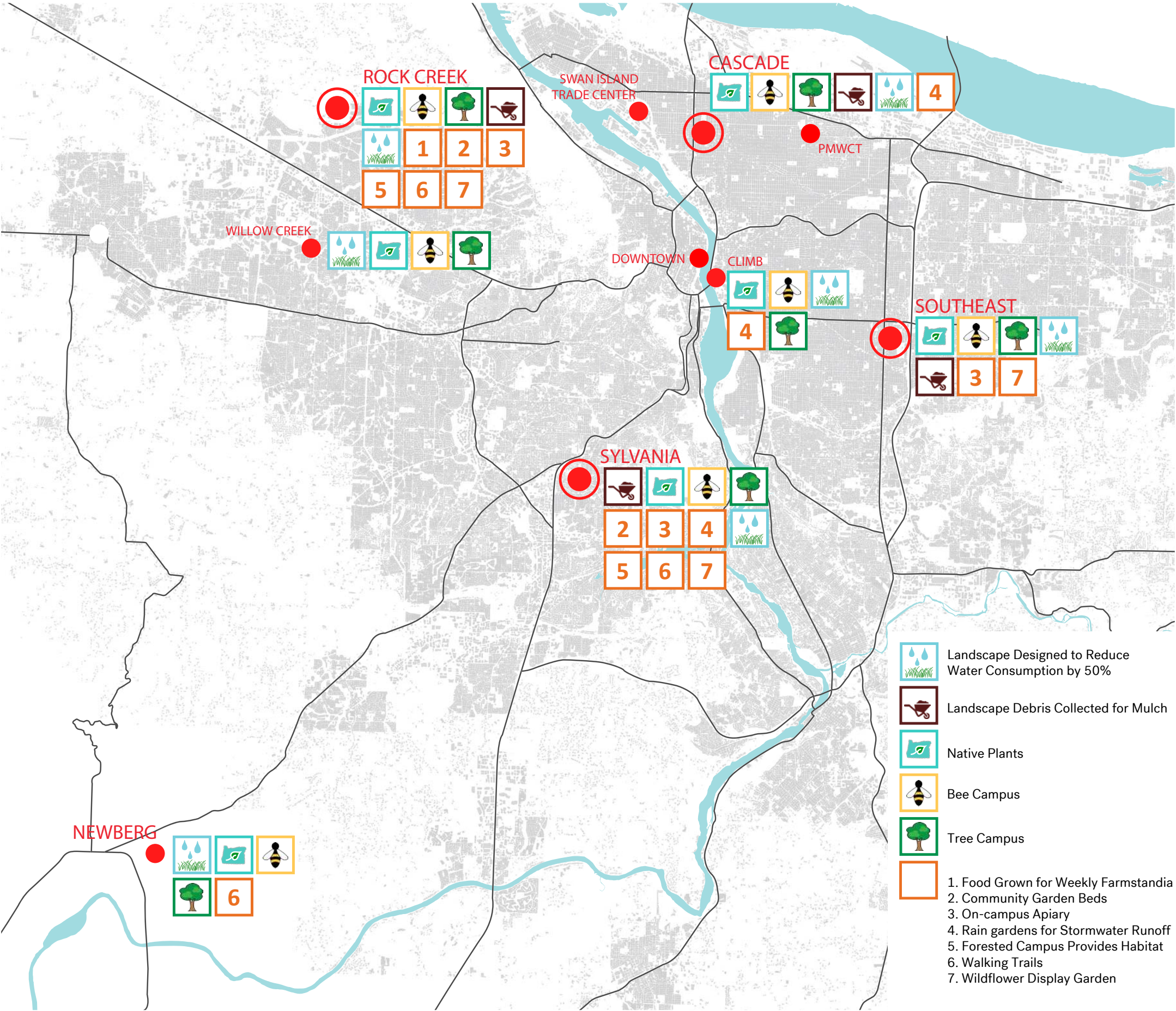
Recommendations:

DISTRICT LEVEL

- Expand habitat to support a variety of pollinators, such as monarchs, and continue participation as a Bee Campus USA school.
- Reduce outdoor water usage 25% below 2015 levels by 2025.
- Expand the Food Forest program district-wide and integrate edible plantings into campus landscape plans, for example adjacent to cafeteria.
- Continue support of Tree Campus USA program with a goal of planting 100 trees annually.
- Reduce pesticide use by another 50% below 2012 levels by 2020.
- Eliminate herbicide use by 2020.
- Remove use of any synthetic fertilizers district-wide by 2020.
- Reduce district-wide turf areas 40% below 2015 levels by 2020, on a campus-by-campus basis.
- Increase educational plant signage, including Food Forest information.

CAMPUS LEVEL

- Expand partnerships with classes to promote living lab experiences.
- Prepare for potential Salmon Safe certification in 2022.
- Create parking lot planting areas to capture stormwater from paved surfaces where possible by 2020.



HEALTH AND WELLBEING

Overview:
The vitality of our college depends on the health of our community. We strive to enhance the health, productivity and quality of life of our students, faculty and staff through the design and maintenance of the built environment and the development and implementation of cutting edge programs that contribute to well-being. Since we spend 90% of our time indoors, the buildings we live, work, learn and relax in have a profound effect on our well-being.

How we live our commitment:
PCC promotes health and well-being through a number of initiatives and programs. The college has four learning gardens, which provide students and staff access to healthy, organic produce, nutrition and cooking classes and stress relief through gardening opportunities.

The college has adopted numerous practices to reduce exposure to pollutants, including implementing green cleaning practices and integrated pest management. Requiring contractors to use products with low VOC also helps to promote healthy indoor environments. All campuses and centers are tobacco-free, reducing second-hand smoke exposure.

Programs that promote employee wellness also abound, including access to on-campus gyms and employee benefits like Healthy Team, Healthy You and Weight Watchers. Work-life balance is encouraged with annual personal days for employees and flex work schedule offerings. Community College and credit classes focusing on health and wellbeing are offered free to employees via the tuition waiver program. Personal health, gym classes, nutrition, personal training and counseling are a few of the many courses offered at the college.

- Standards:**
- Employee Assistance Program (EAP)

- Mandate:**
- State Integrated Pest Management Plan Mandate



1 BIKE PARKING AT CASCADE

2 BLENDER BIKE AT ROCK CREEK

3 NATURAL LIGHT AT CASCADE STUDENT UNION

4 PORTLANDIA FARMSTADIA SELLS FRESH PRODUCE

Health and Well-being Goals:

Enhance the health, productivity and quality of life of the PCC community through the design and maintenance of the built environment.

Develop cutting edge programs that contribute to all aspects of well-being.

Recommendations:

DISTRICT LEVEL

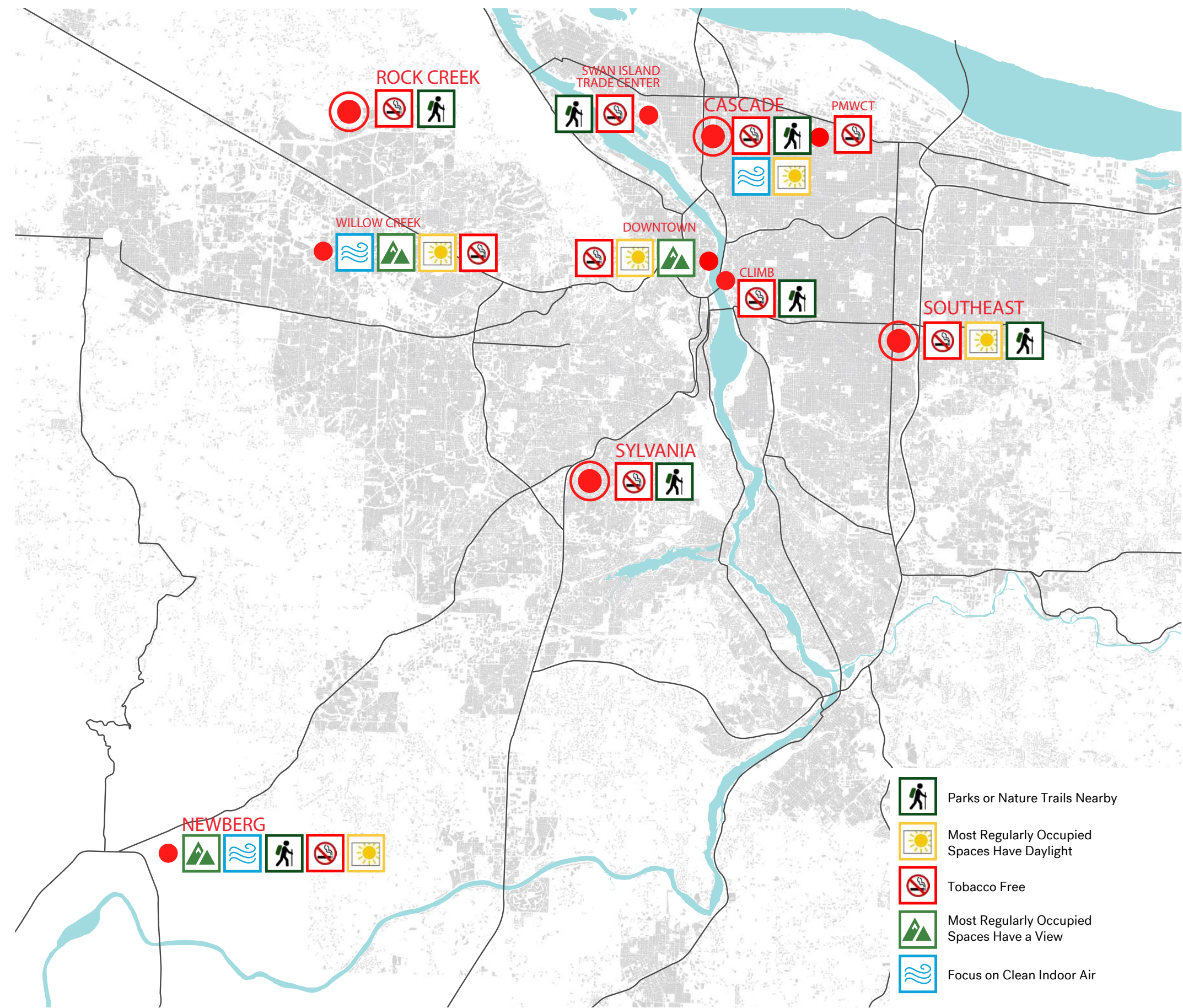
- Reduce inter-campus travel to reduce stress, and to save time and money.

CAMPUS LEVEL

- Add campus amenities like efficient water features, plazas, workout stations, trails, gardens, and public art. Offer complimentary access to gyms, playing fields and swimming pools.
- Require that all computer screens are adjustable for height and distance from the user, at least 30% of workstations have the ability to alternate between sitting and standing positions, and employee furnishings are adjustable in both height and seat depth.
- Expand Rock Creek farm stand program to all campuses.
- Integrate active design elements into exterior spaces by adding amenities that promote pedestrian activity. Include amenities like benches, tables and chairs, and drinking fountains.in highly trafficked areas, like building entrances, transit stops and walking paths,
- Provide eating space and break area furnishings for employees to encourage mindful eating behaviors and socialization.
- Periodically test drinking water for levels of additives, metals and other contaminants.

BUILDING LEVEL

- Promote air purifying plants in buildings.
- Provide access to outdoor air and daylight through operable windows to regularly occupied space.
- Label all food sold or distributed on a daily basis on campus to indicate if they contain food allergens or artificial ingredients.



RENOVATION AND NEW CONSTRUCTION

Overview:

PCC is committed to achieving Leadership in Energy and Environmental Design (LEED™) Silver certification for all new campus buildings, 5,000 square feet or larger, while striving for LEED™ Gold for new facilities and LEED EB for existing buildings. The LEED™ program provides a robust goal for achievement and has a built-in scaling factor in that the standard itself continues to evolve. In addition to the minimum requirement, PCC emphasizes specific goals for energy and water conservation, waste reduction, promoting healthy environments and improvement in daylight and air quality.

How we live our commitment:

The college is committed to green building practices – with a minimum standard of LEED™ Silver and a commitment to supply 15% of the college’s energy from renewable sources. The college has nine LEED™ certified buildings, including a LEED™ Platinum Center in Newberg, designed to be Net-Zero, and three solar installments, ranging from 100 kW to 500 kW, that have produced over 3 million kWh of electricity. Other innovative green building projects include an educational rain garden plaza and green roof atop the PCC CLIMB Center, which received national recognition when it was selected as one of the “2013 Top Storm Water and Erosion Control Projects” in the U.S. by Storm Water Solutions.

Standards:

- As signatories of the ACUPCC, PCC has committed to a minimum of LEED™ Silver certification for new buildings, while striving for LEED™ Gold for buildings over 5,000 square feet.
- When applicable, all new equipment is Energy Star certified and electronics are EPEAT certified.
- The college has a preference of flame retardant-free furnishings when available.
- The college’s Climate Action Plan commits that 15% of electricity consumption must be met from renewable energy sources.

Mandate(s):

- State of Oregon - 1.5% for Green Energy Technology



1 PCC DOWNTOWN CENTER - LEED GOLD 2 ROCK CREEK BUILDING 5 - LEED GOLD 3 SE LIBRARY - LEED GOLD 4 WILLOW CREEK - LEED PLATINUM

Renovation and New Construction Goal:

Employ best practices in construction and renovation through LEED certification and other innovative programs that emphasize resource efficiency, healthy infrastructure and renewable energy.

Recommendations:

DISTRICT LEVEL

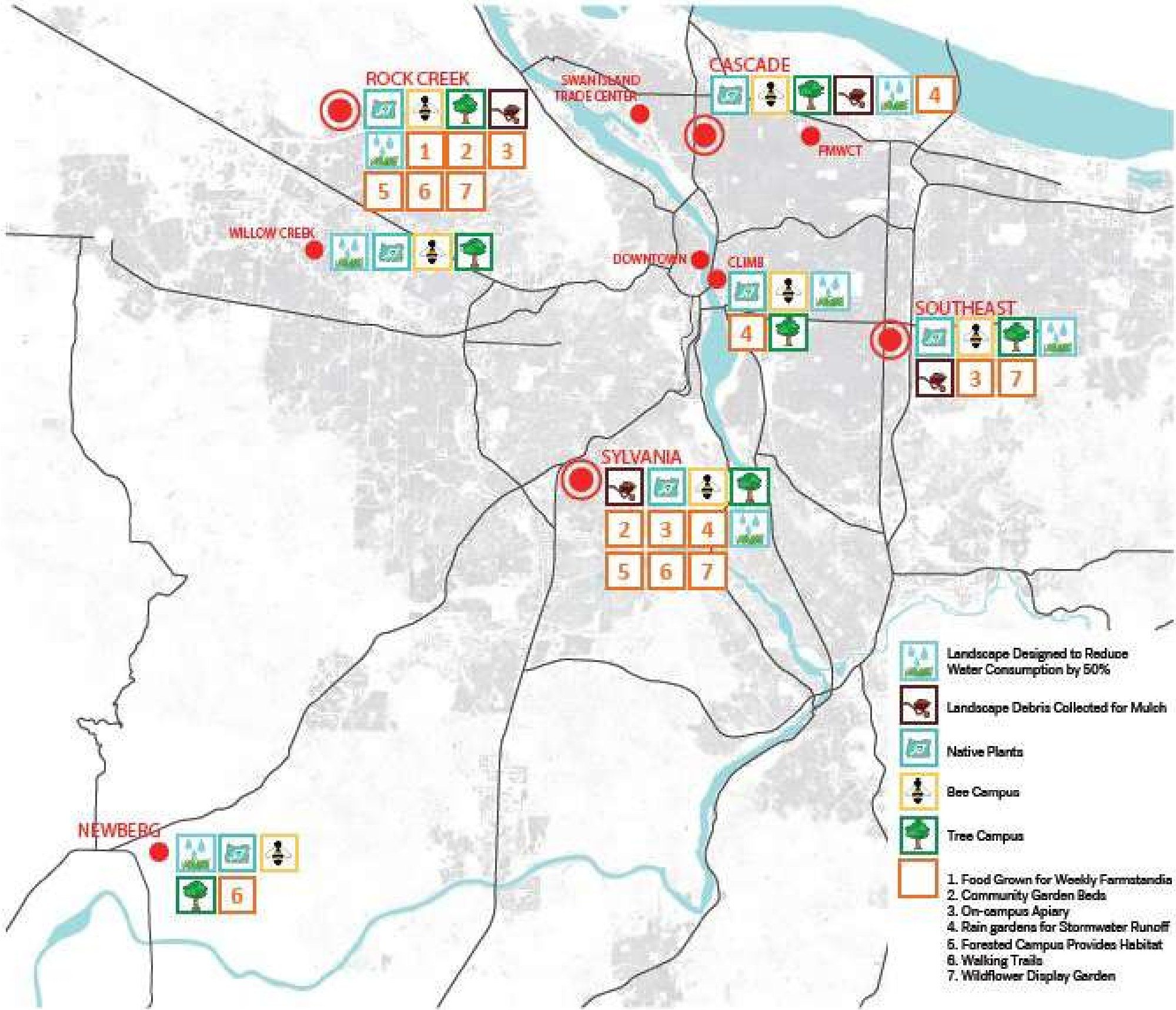
- Emphasize education of sustainable features throughout the district, reinforcing practices with informational signage, interactive kiosks and occupant trainings.
- Prioritize infrastructure that is low-maintenance and reduces consumption over the building’s life-cycle.
- Promote infrastructure that reduces single occupancy vehicle use including teleconferencing capabilities and secure and covered bicycle parking.
- Plan for the college to be photovoltaic ready or Net Zero ready as a district.
- Promote use of healthy building materials through low or zero VOC paintings, coatings, sealants, adhesives, composite wood, carpet & agrifiber products. All materials must avoid the “Red List of Chemicals and Materials” as designated by the International Living Future Institute.

CAMPUS LEVEL

- Offset expected energy use from new construction with renewables or efficiency projects to ensure zero net increase to the college’s energy footprint on a campus by campus basis.
- Require renewable energy for large construction projects.
- Integrate a total cost of ownership approach to new construction & renovation on a campus-by-campus basis.

BUILDING LEVEL

- Encourage projects to pursue the Living Building Challenge, which may be substituted for LEED.
- Divert a minimum of 75% of construction waste from landfill.
- Conserve resources with a minimum of 30% savings in energy and water consumption above ASHRAE standards for all new buildings and renovations.
- Encourage use of daylighting in all new buildings.



SYNERGIES

SUSTAINABILITY AND FACILITIES ANALYSIS

There is an obvious synergy between the work of the facilities analysis team and the sustainability work group. The Mechanical/Electrical/Plumbing team recommended a number of areas for replacement of outdated and under-performing systems. Replacing those systems with better-performing systems is an obvious way to improve the campus’s overall energy performance. For example, any time lighting ballasts fail, the college should replace with newer energy efficiency LEDs, instead of sticking with current fluorescent technology.

Both groups also looked at retro commissioning as a means to save energy. Any time an opportunity exists to update or review a system it is recommended that the system be evaluated to see if there is a business case to incorporate the more energy efficient system or approach.

The sustainability work group overlapped with the work of the Facilities Group’s site and landscape-focused team. The work groups had similar goals in terms of minimizing the use of pesticides and improving stormwater management, reducing outdoor water use and expanding programs that make better use of PCC’s land.

SUSTAINABILITY AND PARKING AND TRANSPORTATION

The sustainability groups recommendation to create a culture that allows for a reduction in commuting is at the core of the parking and transportation team’s work. This work includes support for alternative modes of transportation as well, such as improved secure and covered bike parking and better access to mass transportation.

SUSTAINABILITY AND IT

Several of the sustainability team recommendations will require integration with the campuses Informational Technology group. These range from ideas working with IT to establish trainings for teleconference technology to minimize the need for transportation to developing standard protocols for shutting down computers and remote turnoff.

SUSTAINABILITY AND SPACE UTILIZATION

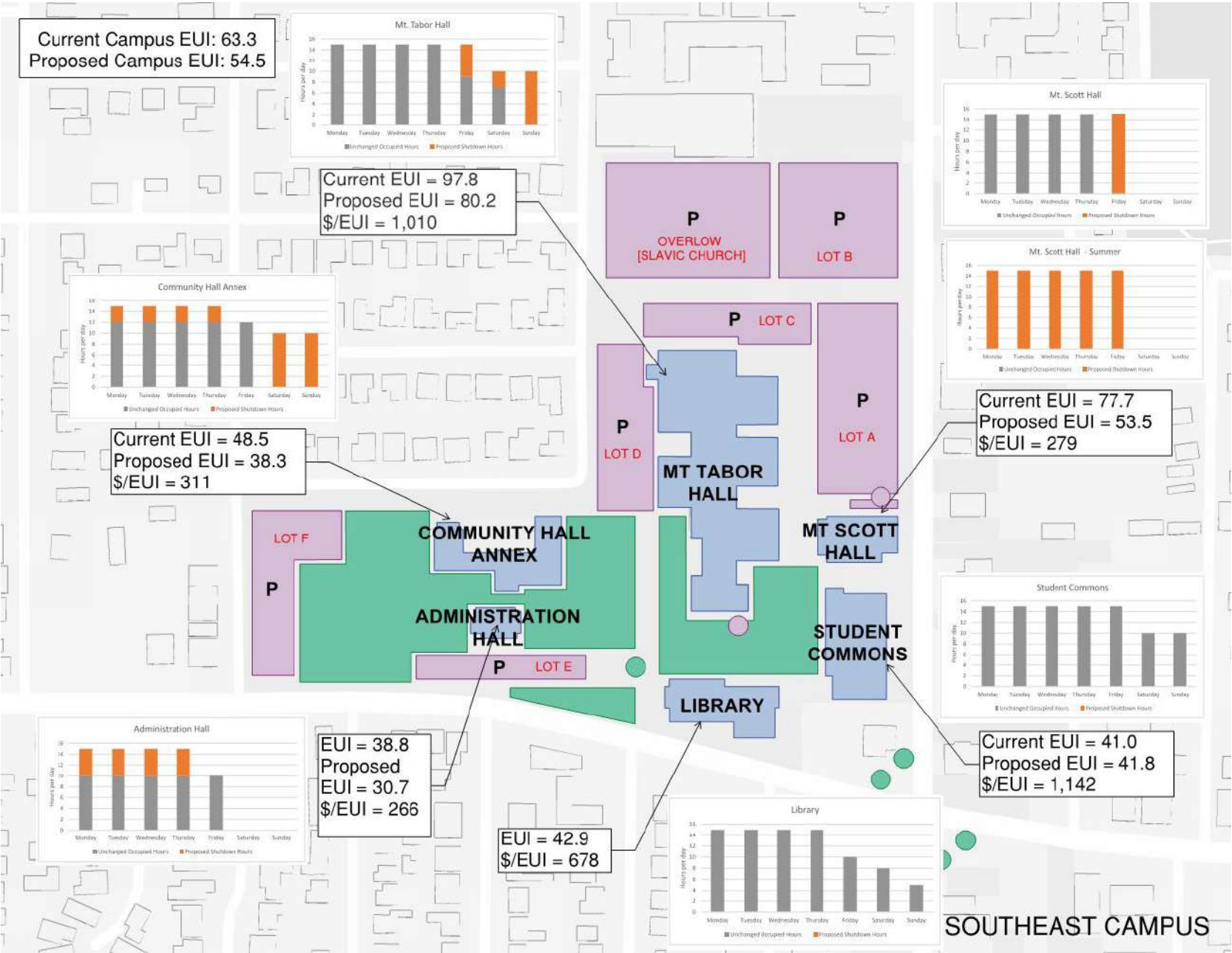
One of the opportunities for reducing the campus’s overall energy usage identified by this report was the opportunity to reduce energy through thoughtful scheduling of buildings. This opportunity was identified because of the synergy between the Space Utilization Group, the Sustainability Group and the Facilities Group. The idea is to consider scheduling classes during off hours based on the efficiency of the building and the potential of scheduling off peak classes in fewer buildings so the less efficient buildings could be shut down and their energy use reduced.

The space utilization report identified that room utilization is generally low on Friday and Saturday. It also identified a reduction in the number of classes with utilization between 5 and 10 pm. This represents a significant opportunity for energy savings. To test how much energy could be saved the evaluation team looked at the smallest, most efficient campus: Southeast. Recognizing that if the savings made sense for the Southeast-- the highest performing campus-- they would make sense on a more system-wide scale.

For the study, the MEP team looked at shifting any classes that occurred during evenings Monday through Thursday and all classes on Friday and Saturday to the most energy efficient buildings on Southeast’s campus which are the Student Commons and the Library. In this test simulation, the hours for the Library and Student Commons remain as they currently are. But since the Student Commons was not fully utilized, classes from other buildings would be moved to the Student Commons during off-peak time. For example, classes that occurred evenings in the Community Hall Annex and the Administration Hall would be relocated to the Student Commons building. Saturday classes in the Community Annex and Mount Tabor Hall would similarly be rescheduled, although Mount Tabor would remain open through the lunch hour to ensure the cafeteria was open for student use. Friday classes in Mount Scott Hall would be similarly relocated to the Student Commons. The study also considered the possibility of relocating all classes from Mount Scott during the less-busy summer term.

This consolidation of classes was predicted to save between \$14,000 and \$29,000 annually, and extrapolated those savings to apply to other campuses. Based on that extrapolation, the energy savings is estimated to be approximately 25% of the overall current energy use. Additionally, there would be savings associated with lower maintenance costs, reduced security and extended equipment life. There also is a potential to improve the safety of the campus by consolidating the uses into fewer buildings and therefore limiting the potential for an attack to occur unguarded.

The results of this simulation did not look at non-classroom uses. It is recommended that non-classroom uses be considered, which would require a more



Map of Southeast Campus showing Current and Proposed EUI if classes are shifted to the Library and Student Commons building during lower usage times.

Southeast Campus Estimated Energy & Cost Savings Summary					
Building	Gas Savings (kBtu)	Elec Savings (kBtu)	Gas Savings	Elec Savings	Total Savings
Mt. Scott Hall	~155,000	~315,000	Less than \$1000	\$3,000-6,000	\$3,000-7000
Mt. Tabor Hall	~565,000	~705,000	\$1,000-3,000	\$7,000-14,000	\$8,000-17,000
Community Hall Annex	~9,000	~150,000	-	\$1,000-3,000	\$1,000-3,000
Administration Hall	~8,000	~100,000	-	\$1,000-2,000	\$1,000-2,000
Totals	~735,000	~1,270,000	\$2,000 -4,000	\$12,000-25,000	\$14,000-29,000

Table showing energy savings if classes are shifted to the Library and Student Commons building during lower usage times.

CONCLUSIONS

Sustainability is well integrated at PCC at multiple levels. It is a core value of the community college and continues to be a defining quality for students and staff.

EDUCATION AND CULTURE

Since improving sustainability education and elevating the culture has the potential to increase the effectiveness of all other categories, the sustainability work group focused on Education and Culture as one of the prime areas for improvement. PCC has many sustainability focused courses, demonstration kiosks, signage and graphics throughout its four campuses and eight centers, but there is room for improvement.

- Goals include:
- Use PCC’s four campuses and eight centers as living laboratories to foster the next generation of sustainability solution practitioners.
 - Foster a culture that embraces sustainability as part of the college’s academic work, guiding principles and institutional practices.

HEALTH AND WELL-BEING

PCC has in place numerous programs to improve the health and well-being of its students, faculty and staff. The work group looked to the recently adopted WELL™ Building Standard to better understand areas PCC could look at to improve what it is already doing. The Well™ Building Standard has goals in the categories of Air, Water, Lighting, Fitness, Comfort, Mind and Innovation. The sustainability work group looked to include, at a minimum, one recommendation for improvement in each of these categories.

- Goals include:
- Enhance the health, productivity and quality of life of the PCC community through the design and maintenance of the built environment.
 - Develop cutting-edge programs that contribute to all aspects of wellbeing.

GROUND AND NATURAL SYSTEMS

This category is one of the PCC’s strongest areas, with numerous standards in place such as the Bee Campus USA and Tree Campus USA. PCC also incorporates numerous sustainability strategies in the category of grounds maintenance, incorporating natural techniques into the landscape maintenance procedures and systems.

- Goals include:
- Promote healthy, toxic-free, resource efficient and aesthetically pleasing landscapes that encourage native landscapes, a sense of place and outdoor learning.

RENOVATION AND NEW CONSTRUCTION

PCC is a participant in the American College and Universities Presidents’ Climate Commitment which mandates LEED™ certification for projects over 5,000 square feet. To look beyond certification, the group also made recommendations for areas of focus in design strategies, including waste reduction, energy and water efficiency, and use of healthy materials. The intent is to focus PCC’s design teams on specific credit goals and the areas of sustainability design important to the college.

- Goals include:
- Employ best practices in construction and renovation through LEED™ certification and other innovative programs that emphasize resource efficiency, healthy infrastructure and renewable energy.
 - Use strategies that emphasize resource efficiency, healthy materials and renewable energy in order to achieve their LEED™ goals.

PCC’s policy of LEED™ Silver aligned or exceeded most other comparable institutions. Some institutions set the minimum square footage for LEED™ certification higher than the college’s minimum 5,000 sf. One suggestion the group discussed to help offset costs of LEED™ certification, but still attain a credible third party review was to consider Earth Advantage Small Commercial certifications for facilities under 5,000 square feet.

CAMPUS OPERATIONS

Campus operations is a particularly broad category that encompasses many areas. In reviewing other sustainability plans the focus was around four broad categories, Building Operations, Transportation, Purchasing and Dining services. The Building Operations category was further broken down into waste reduction, IT, Indoor air quality, maintenance and custodial.

The two goals articulated in the area are intended to provide an overarching guiding framework, with recommendations providing more specific tangible steps for the College to incorporate.

- Goals include:
- Ensure best practices for managing buildings in a sustainable and energy efficient manner in order to assist the facilities team in meeting sustainability related goals, standards and commitments.
 - Integrate a culture of sustainability into all aspects of college operations.

ENERGY AND EMISSIONS

The goal of meeting the American Colleges and Universities Presidents’ Climate Commitment is by far the most lofty goal the college is undertaking, both because of its reach and the magnitude of the energy reductions it articulates.

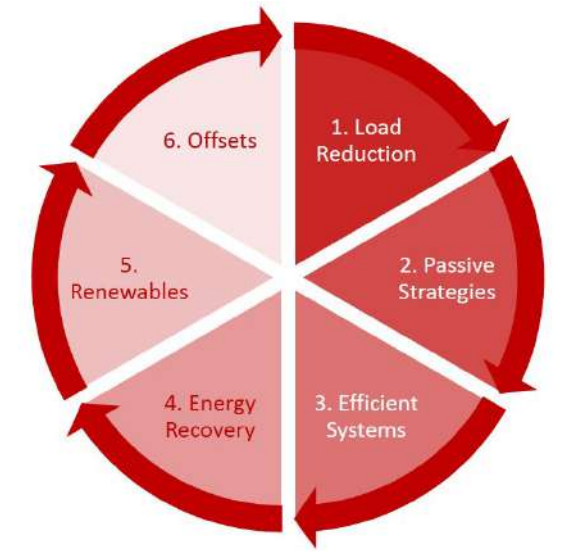
- Goals include:
- Employ best practices in the design of new facilities and in building operations and maintenance to achieve at least 30% energy savings beyond building code for all buildings.
 - Meet the college’s Climate Action Plan goal of a 40% reduction in GHG emissions by 2030 and an 80% reduction by 2050 below 2006 levels.

Because the facilities team is already focused on energy efficient upgrades related to mechanical and electrical systems, the sustainability work group focused on load reductions from behavior change as the highest priority for this plan. As the study on the previous page

illustrates, a prime example of where PCC can do better in terms of energy savings is to consolidate after hours activities (nights and weekends) and classes in fewer, more energy-efficient locations.

The group also made several recommendations for integration of passive systems, such as daylighting and passive cooling into the new buildings PCC undertakes. The group echoed the facilities team’s recommendations for improving out-dated equipment, chillers, boilers, air handlers and especially lighting as ways to save energy, through improving efficiency. A protocol the team suggested is to require a net present value calculation be done for each new project undertaken to determine if a strategy, that might have a higher first cost, makes sense in the long run.

PCC is a leader in the community in terms of incorporating renewables, with three large solar arrays district-wide, and several smaller demonstration systems. As photo-voltaic technology improves, PCC should continue to lead in this important area-



This chart outlines the steps, from lowest first cost to highest, PCC should consider in terms of meeting their energy efficiency goals.

DEFINITIONS

LEED™
The US Green Building Council’s LEED™ green building certification program is one of the world’s foremost instrument for the design, construction, operations and maintenance of green buildings. Through a carefully managed, independent, third-party verification system, LEED™ affirms the integrity of green building commitments by ensuring project teams are delivering on design plans and goals. Third-party validation helps guarantee that each project saves energy, water and other resources, reducing the overall environmental impact.

LIVING BUILDING CHALLENGE
The Living Building Challenge is a green building certification program and sustainable design framework that visualizes the ideal for the built environment. The Living Building Challenge rewards development of buildings that are:

- Regenerative spaces that connect occupants to light, air, food, nature, and community;
- Self-sufficient and remain within the resource limits of their site.
- Net-positive energy, producing more than they use
- Able to collect and treat all water on site;
- Healthy and beautiful.

Living buildings give more than they take, creating a positive impact on the human and natural systems that interact with them.

EARTH ADVANTAGE COMMERCIAL
Earth Advantage Commercial (EAC) was developed to specifically address the green building certification needs of smaller commercial projects. It reduces the costs and complexities of delivering certification to smaller buildings while providing comprehensive and robust results.

EAC offers a complementary certification option by providing a primarily prescriptive system that is streamlined and cost-effective for project teams who might be reluctant to certify to LEED standards. For instance, EAC utilizes the New Buildings Institute’s Advanced Buildings Core Performance Guide – a