

Power Plant Redevelopment in Other Cities:

Baltimore, MD: Pratt Street Power Plant at Inner Harbor¹

- Operated 1900-1973: mainly produced power for streetcars
- 1977: city purchased plant for \$1.65 million
- Indoor Six Flags theme park (1985-1989)—failure
- 1997: Partnership between the City of Baltimore and the Cordish Companies: Cordish invests \$50 million in redevelopment
- Publicly owned
- Mixed-use development: ESPN Zone, Hard Rock Café, Barnes and Noble, Chipotles, offices, ect.
 - 120,000 sq. ft. of retail space, 60,000 sq. ft. of office space
 - Original smokestacks, coal chutes, large windows, open floor plates preserved
 - Attracted over ten million visitors in 1 year and generated several million dollars of direct taxes to the public sector²
 - Prior to development, building sat vacant for approximately ten years in the hands of various developers. Based on its success, The Power Plant has been expanded to include the adjacent Pier IV Retail/Entertainment and Office Building.
 - 1999: Cordish invest \$35 million in adjacent “Power Plant Live” entertainment district
 - The City of Baltimore shares in 22% of annual operating profit, starting in 2009, 10 years after leasing began.
 - Revitalize Baltimore and Spurred eastward development of Downtown Baltimore and waterfront
 - Led to Power Plant Live!: redevelopment of two vacanted city square blocks into entertainment district and loft offices—triggered billions of dollars in additional development in surrounding area—hotel and residential tower (public private partnership) Opened in 2000
 - Attracts millions of visitors, creating thousands of new jobs and millions of dollars of tax revenue for the City of Baltimore
 - Entertainment venues: restaurants, bars, comedy, dance clubs, dueling pianos and is anchored by a 1,600 occupancy state-of-the-art live music venue. Opened in phases during 2001 and 2002
 - Cordish Co. has an affinity for power plants because, they say, these structures are good candidates for redevelopment, often located at the heart of prime urban areas and that, when done right, power plants are unforgettable settings for retail, replete with character.
 - The four original smokestacks were preserved atop the boiler room. On the front smokestack, Hard Rock hung a 65-foot neon guitar, their trademark signage. This move has been highly controversial primarily for

¹ http://www.sourcewatch.org/index.php?title=Pratt_Street_Power_Plant

² <http://www.cordish.com/sub.cfm?section=newdev>

aesthetic reasons. Many in the preservation community see this advertisement as cheapening the significance of this historic power plant.

- In 2000, The Power Plant won an Urban Land Institute Award of Excellence for the rehabilitation project. The award states “The Power Plant is a prime example of the conversion of a functionally obsolete building into a successful, modern project. The developer saved the four towering smokestacks – visual reminders of Baltimore’s industrial past...”

Burlington, VT: Moran Power Plant³

- Operated 1953 to 1986
- Redevelopment advantage of most major equipment removed and intact structure, location on waterfront near downtown area
- Environmental contamination: PCB, asbestos, lead paint, *7 tons of pigeon poop* inside—funded by EPA Brownfields program, Chittenden County Regional Planning Commission, Vermont Department of Environmental Conservation
 - 2008: EPA Brownsfield Sustainability Pilot program award
 - Contaminated soil and ground water
- To be converted into energy efficient, community-owned recreation area—family adventure center: community sailing, indoor ice rink and rock climbing, restaurants and cafes
 - To finance development without raising property taxes
 - Plan to be extension of waterfront park, improve pedestrian and bike trails,
- Problems:⁴
 - As of June 2011: No official agreement made White and Burke Associates (company fired to create development agreement and financial negotiations) for the city and Moran future tenants—then needs City Council approval
 - City political issues
 - Because of construction delay, other future tenants withdrew
 - Costs:
 - To fund redevelopment, utilized historic tax credit from National Park Service and other public funding (TIF district, ect)⁵
 - \$16 million remodeling expense for the building
 - The city has spent about \$860,000 with about \$1.6 million lined up for initial expenditures

³http://www.cedoburlington.org/waterfront/moran_plant/moran_plant_redevelopment.htm
http://docs.google.com/viewer?a=v&q=cache:9Ge4RYEd8gIJ:www.enpro.com/testimonials/MoranPowerPlant.pdf+epa+moran+power+plant&hl=en&gl=us&pid=bl&srcid=ADGEEShTu68NDeSkD3DDbjUIDsUDCnaYPwJqJ5DKJHXWp-C2PiWJZEZ_RXLP44UDX1rsJ_uSQcL_k5JAASwZ-7RxJu4MIOQH2epiV_1eDgSAzw6d2b01MetJN29LVONkHlzneYdPew5i&sig=AHIEtbSqFo8s7FnY0KVXgl7wtgPaNe48qQ

www.epa.gov/brownfields/sustain_plts/reports/sustain_report_web_final.pdf

⁴<http://www.burlingtonfreepress.com/article/20110606/NEWS02/110605019/Moran-plant-progress-slow>

⁵ http://www.cedoburlington.org/waterfront/moran_plant/Financing_plan.htm

- Project is intended to be self-supporting—generate revenue by future tenants to cover expenditures

Austin, TX: Seaholm Power Plant⁶

- Operation from 1950-1989; 7.8 acres in downtown Austin area on Colorado River
- 110,000 sq. ft. main building with Art-Deco Moderne
- 1996: citizens group, 'Friends of Seaholm', prevailed in a campaign to get the Austin City Council to direct the City owned Electric Utility to decommission the plant and convert into a new public use
- 2005: Southwest Strategies Group of Austin began to work with City of Austin to redevelop Plant
 - Also includes Centro Partners, La Corsha Hospitality Group
- 2006: EPA deems ready for use after Austin Energy's 8-year, \$15 million cleanup and remediation
- Before development construction: event location for MTV, festivals, ect.
- Currently houses a wastewater treatment plant (which will be relocated with development) and an electrical substation (which will remain with a smaller footprint—similar to Salem Harbor Station)
- Mixed-use development of office space, retail shops, 800 condos, Seaholm Plaza Hotel with 160 rooms, special event space, a plaza, and an outdoor terrace, 1-acre of public open park space
- Redevelopment is expected to create more than 200 jobs and produce \$2 million a year in tax revenue
- Toward LEED-status
- Public and Private Partnership: city with Development Team: [Seaholm Power, LLC](#).

New Braunfels, TX: Comal Power Plant⁷

- Operated 1925-1973 as a hydroelectric plant (first used lignite coal as fuel, then switched to natural gas)
- Vacant for 30 years, then owner Lower Colorado River Authority (LCRA) started environmental cleanup of site in 1989
 - Asbestos, polychlorinated biphenyls, landfills, above-ground fuel storage tanks, an old transmission substation, lead-based, repairing the Comal Dam
 - \$11.5 million for site cleanup
- 1990s: LCRA worked with residents and city to preserve plant
- Converted for residential use by developer Larry Peel: 110 lofts and 185 garden apartments on surrounding property

⁶ www.westonsolutions.com/about/news.../ScaddenNDIA01.pdf
<http://www.seaholm.info/html/project.html>

<http://www.ci.austin.tx.us/seaholm/powerplant.htm>

⁷ http://www.lcra.org/featurestory/2007/comal_dedication.html
<http://landmarklofts.com/history/>

<http://www.austinchronicle.com/columns/2000-06-02/77427/>

- National Register of Historic Places—eligible for substantial tax credits
- Location near Comal River and Landa Park—popular public recreational areas
- Increased \$560,000 in annual property tax revenues to the city, county and school district, (according to preliminary estimates)
- 2004: building listed in the National Register of Historic Places by the U.S. Department of Interior
- Resort amenities: 24 hour fitness center, spa, dry sauna, steam room and locker room-shower room, pool with a cabana and fire pit, 6,000 sq.ft. clubhouse, onsite Coffee Shop, Paul Mitchell Salon and Spa

Chicago, IL: Former Sears, Roebuck & Company Power House⁸

- Built 1905 to power the 55-acre Sears, Roebuck & Company complex—closed 1973 when relocated to the Sears Tower in downtown Chicago
- 55-acre in North Lawndale, urban decline after the 60s
- Site listed on the National Register of Historic Places, designated as a National Historic Landmark
- 1980's development planning begins
- Converted into an LEED-Platinum certified educational facility/Henry Ford Academy Power House High-public charter high school/community meeting space: The Charles H. Shaw Technology and Learning Center
- Completed in 2009: developer Homan Arthington Foundation, MacRostie Historic Advisors, Chicago architects Farr Associates
- Preserved turbines, hoppers, a coal ash conveyor belt, boilers, steam piping, and sliding fire doors while installing geo-thermal heating and cooling, energy recovery ventilators, retrofitted historic windows, elevator, and a direct digital control system with web interface, planted roof, low-flow toilets
- Total Rehabilitation Cost: \$48 million, about \$17 million federal tax credits
 - Close to 50% of total costs were funded by private contributions in the form of contributions to a capital campaign and loans
 - Chicago Development fund by City of Chicago about \$14 billion which requires projects after 2005 to comply with sustainable development policy

San Diego, CA: Station B/San Diego Electric Railway Company Powerhouse⁹

- 1911-1983: two blocks from San Diego bay; occupied entire city block; Classical Revival architecture
- Abandoned for 20 years
- Ten coal smokestacks removed around 1994
- 2008: converted into “Electra” Private owner--Bosa Development Company to develop a luxury 43-story, 248-unit condominium project--to accomplish this

⁸ http://www.macrostiehistoric.com/pages/sears_power_house_/106.php

<http://featuresblogs.chicagotribune.com/theskyline/2009/09/power-play-architects-help-turn-old-sears-power-plant-in-chicago-to-new-charter-school-.html>

⁹ www.hudsonriverpowerhouse.com/docs/Preservation_plan.pdf

within a landmarked building, everything from within the four outer walls was demolished leaving only the façade.--\$248 million

- Large original turbine hall was demolished but was rebuilt as an approximation of the original
- San Diego's tallest residential building
- \$500,000 to 2.5 million selling price
- Historical landmark in 1998 because of its aesthetic and historic significance.
- Rather than demolish the building, they preserved the facade, incorporated earthquake retrofits and built the residential living area setback from the main drag of Broadway. What was once a boiler and turbine building now rises San Diego's tallest residential condominium tower. The area in the building that housed the turbine and boiler is now a conservatory-type room for the residents of the building.
- It took four years to develop the property, but it generated enough interest to sell out in just three months.

Colorado/Xcel Energy:

- Testing of A Hybrid Solar Coal Plant in Cameo Generating Station¹⁰
 - Uses solar energy to provide heat for producing supplemental steam to help lower the usage of coal, lower carbon dioxide emissions, and increase plant efficiency¹¹
- Arapahoe Station, Colorado
 - Xcel plans to replace the combined 229 MW of coal power with 850 MW of wind power and a 200 MW utility-scale solar power plant with storage capacity by 2015. Another key component of Xcel's proposal, to build a 480 MW natural gas plant at the Arapahoe station, has been postponed pending approval by the Colorado PUC¹²

Lackawanna, N.Y: Bethlehem Steel Mill¹³

- Closed in 2001, thousands of jobs lost and polluted Superfund Site
- 2006: Began to build 8 wind turbines on 30-acres of property (Steel Wind project)---electricity powers more than 6,000 homes in western New York
- Plans to install six more windmills at the site.
- Operated by First Wind and BQ Energy
- Benefits of brownfields: Using already uses already disturbed land; most already connected to power grid that eliminates building transmission lines, produce jobs,

Repurposing a Coal Mine in the Netherlands for Geothermal:

¹⁰ http://www.xcelenergy.com/About_Us/Energy_News/News_Archive/First-ever_solar-coal_project_is_running

¹¹ <http://www.earthtechling.com/2010/07/hybrid-solar-coal-plant-being-tested-in-colorado/>

¹² <http://www.westernresourceadvocates.org/energy/coal/cleanenergyaccomplishments.php>

¹³ <http://www.dailyclimate.org/tdc-newsroom/2009/10/green-shoots-from-brownfields>

<http://www.ecofriend.com/entry/eco-tech-repurposed-coal-mine-generates-geothermal-energy/>

Coal Plant to Biomass:

<http://www.earthtechling.com/2010/11/california-coal-plant-turning-to-biomass/>

Colorado: Xcel Energy's Cherokee Power Plant to convert to natural gas

- If switches to natural gas, it could cost customers 1.7 to 2.3 % more on their utility bills
- Converting to burning biomass more expensive because of the costs of cutting down forests and transporting the fuel and reliability issues with biomass
- Other examples of repurposing coal-fired technology to natural gas turbine:
 - St. Petersburg, Florida—Bartow Power Plant: \$800 million investment, 1200MW, redesigned plant takes up less land opening portions of the property for future redevelopment
 - Weymouth, Massachusetts—Fore River Plant: 800 MW

International Examples:

London, England: Bankside Power Station on the Thames River¹⁴

- 1952-1981, historic distinguished architecture
- Converted into Tate Modern Art Gallery by Swiss firm Herzog & de Meuron-- completed conversion in 2002 and added a two-story glass structure for natural light into the gallery
- Privately owned museum
- Almost demolished, despite a great deal of the community campaigning for its reuse--Tate Gallery announced in 1994 that the Bankside Station would be their new location.
- To select the design and architects for the conversion, an international architectural competition was held attracting entries from practices all over the world. The winning architectural firm was Herzog & de Meuron. Their design won them the Pritzker Prize in 2001.
- Turbine hall with overhead traveling crane preserved
- Also houses an auditorium, cafes, shops, and education center
- One of the most visited modern art galleries in the world with over 4.7 million visitors a year
- Tate Modern generates £100 million in economic benefits to London annually and generated 4,000 new jobs. Its conversion is a celebration of industrial

¹⁴ <http://www.tate.org.uk/modern/building/>

architecture and the defining features powerhouses offer and brought attention to a primarily industrial area of London.¹⁵

- Financial Methods:
 - Tate Modern was designated a landmark project for London by the Millennium Commission, who contributed £50 million of lottery money towards the scheme.
 - English Partnerships, the government's urban regeneration agency, provided £12 million to purchase the site and pay for the removal of the machinery
 - The Arts Council of England contributed £6.2 million of lottery money towards the conversion of Level 4 of the gallery into a temporary exhibitions space
 - The London Borough of Southwark was a key initial investor
 - Significant donations from other public, private and charitable sources
- Additional Construction to be completed in 2012: two-story glass extension on one half of the roof
- Preservation: much of the internal structure remains, including the cavernous main turbine hall, which retains the overhead travelling crane
- An electrical substation remained on-site and owned by EDF Energy
- Community garden opened in 2007

Sydney, Australia: Ultimo Power Station¹⁶

- Operated 1899/1902-1961 to power new electric tram system
- 1979: Government chose site to house the Sydney Powerhouse Museum
- Needed large space to house exhibition objects, theatres, classrooms, disability access, restaurants
- Renovated and added additional building
- Currently one of Australia's most distinguished museums
- Average of over 480,000 visitors annually to just the Ultimo building

Western Harbor (Malmo, SE)¹⁷

City of Malmo:

- Sweden's third largest city with about 300,000 inhabitants
- Contributing to Sweden's plan to reduce its carbon dioxide emissions by 25 percent between 2008 and 2012, exceeding the 5 percent goal set by the Kyoto Protocol.
- The City of Malmö's stated goal is to be climate neutral by 2020, and aims to have the ENTIRE municipality on 100% renewable energy by 2030

¹⁵ www.hudsonriverpowerhouse.com/docs/Preservation_plan.pdf

¹⁶ <http://www.powerhousemuseum.com/about/aboutHistory.php>

¹⁷ <http://www.malmo.se/English/Western-Harbour.html>

<http://spfaust.wordpress.com/2011/02/25/city-of-sustainability-and-renewable-energy/>

<http://www.buildinggreen.com/live/index.cfm/2007/12/11/Notes-from-Sweden-2-Western-Harbor-in-Malmo>

- City considered Sweden's most culturally diverse city with over 170 different ethnic groups represented

Western Harbor:

- Kockums shipyard closed in 1986, Then SAAB factory—high unemployment rates, local economy faltered
- Old industrial areas transformed into new waterfront district
- Includes: homes, businesses, schools, service facilities, parks and green spaces
- **Cleanup:**¹⁸
 - Soil cleanup from industrial waste and landfills necessary before any development construction started--A total of 6000m³ had to be removed for decontamination and treatment.
 - Marine/seabed: increased amounts of heavy metals and petroleum hydrocarbon—removed sediment where canal meets the sea
- **Development Dates:** 2001 to Present
 - Triggered by government support (250 million Skr) and Bo01 EXPO
- **Participants/Partnership**
 - Local authorities, businesses, researchers and citizen groups
 - Municipal offices: The City Planning Office, the Environment Department, and the Real Estate Department
 - Local area universities, research boards and Boverket (the Swedish National Board of Housing)
 - E.ON developed a unique concept based on 100% locally renewable energy
- **Bo01 European Housing Expedition (Bomässan 2001):**
 - First phase of Western Harbor development--triggered sustainable development in Western Harbor and formation of new districts like Västra Hamnen
 - Expedition's main objectives: develop self-sufficient housing units along the waterfront areas and greatly diminish emissions
 - Completed 350 apartments for the Expo that showcased renewable energy
 - Included private residences, offices and services, as well as parks and open spaces
 - Triggered construction of the Turning Torso
 - Highest residential building at 623 feet with 54 stories, constructed with sustainability profile.
- **Development after Bo01:**
 - The Flagghusen Quarter: second development in Western Harbor:
 - Stresses environment, energy and quality aspirations, whilst incorporating affordability
 - Included two passive buildings, heated by warmth from human bodies, electrical apparatus, lighting and solar radiation
 - The Fullriggaren Quarter: the third development in the Western Harbor:

¹⁸ sustainablecities.dk/files/file/vhfolder_malmostad_0308_eng.pdf

- Functions as a link between existing areas to the west, east and south to create a cohesive urban area.
- **Site Size: Started with 62 acres in the first phase, the Bo01 Expo**
 - Growing to over 395 acre mixed-use district today
- **Mixed-Use Sustainable Development:**
 - Western Harbor is run on 100% local renewable energy—from sun, wind and hydropower, as well as biofuels generated from organic waste
 - Use of the underground aquifer for heating and cooling
 - Solar panels, solar cells and underground thermal mass storage facilities
 - Third largest wind park in the world - Lillgrund.
 - Buildings constructed with sustainable materials
 - Transportation: Streets are pedestrian and cycle friendly — 40 percent of commuters and 30 percent of all travelers go by bike
 - Public transportation: buses given preferred, motor vehicle traffic restricted
 - Green space:
 - Green roofs, parks, trees, nesting boxes for birds and bats, adequate soil depth for vegetables and wildflowers
 - Rain water collected in canals, ponds, and fountains—For cleaning and infiltration of Storm water
 - Waste and Refuse:
 - All buildings have access to sorting of waste
 - Biological waste separated, food waste disposers, underground tank, vacuum collection vehicle, biogas digester
 - Refuse suction/vacuum system: pipes in the group where refuse is discarded then sucked to the outskirts of the area to be picked up by trucks and deliver to a municipal waste treatment company in Malmö—prevents trucks from driving in residential area; minimizes traffic
 - Organic waste used for biogas production
 - The rest is incinerated for heat and electricity production.
 - Over twenty six different architectural firms have designed the residential houses¹⁹
 - But all houses built to Quality Programme standards, established by Bo01 expo, the property developers, and City of Malmö—determines architectural qualities, choice of materials, energy consumption, green issues and technical infrastructure.
 - Most houses have Houses have total energy demand of a maximum of 105 kWh/m²²⁰ or 33,280 btu/sf.

Economic Development:

- Thousands of tourists each year

¹⁹ <http://www.malmo.se/English/Sustainable-City-Development/Bo01---Western-Harbour/Buildings.html>

²⁰ http://www.polis-solar.eu/IMG/pdf/Cat-_1Western_Harbour_Malmi.pdf

- Approximately 7000 persons are employed in the district, roughly 5000 students study there and an estimated 6500 persons are expected to live in the district by 2013.²¹

Future of Western Harbor:

- Planning for area to accommodate 10,000 residents and 20,000 employees and students.

Adjacent Uses:²²

- Malmö University
- Universitetsholmen
- Augustenborg District
- Oresund Bridge—connects Malmo to Copenhagen, completed in 2000
 - twin-track railway and daily commuter trains.

Financial Costs/Funding Sources:

- State funding
- Business funding
- Grants from EU and Swedish government
 - EU's Green Tools for Urban Climate Adaptation funding program for the installation of the green facades and rooftops in Malmö
 - Sweden's Local Initiatives Program (LIP)

Success of from Western Harbor/Lessons:²³

- Sweden is recognized as one of the most progressive countries in EU for climate change mitigation and adaptation strategies, policies and action.
 - National vision and leadership across the country.
 - Began efforts as early as 1991, with carbon tax
- Success based on combination of statewide comprehensive legislative and policy leadership, innovative integrated design strategies, stable access to unique funding opportunities, educational programs, and commitment to multi-stakeholder processes that ensures community commitment and implementation. Because decision-making is located at the municipal level due to the high level of decentralization in Sweden, Swedish municipalities are able to directly implement projects uniquely designed to meet the needs of their communities, and have access to the necessary funding and political support for local projects.
- Multi-stakeholder involvement:
 - Municipality, developers, businesses, construction companies, local energy company, citizens work together at early and later stages--design and implementation of sustainable development projects

²¹www.unhabitat.org/downloads/docs/7291_97708_Malm%25C3%25B6Submission

²² <http://www.buildipedia.com/go-green/eco-news-and-trends/item/1460-ecocity-malm%25C3%25B6-sustainable-urban-development?tmpl=component&print=1>

²³<http://www.crcresearch.org/community-research-connections/climate-change-adaptation-and-mitigation/malm%25C3%25B6-sweden-integrating-pol>
<http://www.lonelyplanet.com/travelblogs/1284/46116/Sustainable+Cities+%E2%80%93+Learning+from+Malmo?destId=360794>

- Interactive planning workshops, meetings, ongoing discussions, education and information programs
- Multiple levels of governments
- City departments with inter-departmental coordination and communication
- Strong political support and leadership
 - Mayor of Malmo, Sweden, Öresund Region
- Highly planned strategy: goals, targets, legal framework
- Sustainability features made visible to public eye--modern form, pride, culture
 - Solar thermal panels and solar photovoltaic cells located on buildings for all to see; wind turbines visible
 - Vacuum refuse waste system pipes
 - Water Canals

Future/Potential Redevelopment Projects: Salem Harbor Station and Potomac River Generating Station

Redevelopment of Salem Harbor Station

Salem Harbor Background:

- All four coal-burning units and one oil-burning unit to be shut down by June 1, 2014
- Generates 745 MW
- 65-acre waterfront site
- 2010: City of Salem purchased Blaney Street Property (2-acres, adjacent to Plant) from Dominion for \$1.7 million with Mass. Seaport Advisory grant²⁴
 - 2005-2010: Leased property from Dominion for \$1/year and built temporary pier and parking lot, began Salem Ferry (round trip service from Boston to Salem) in 2006
 - Important for Salem's waterfront development plans/local economy/Salem Wharf Project
- No current plans for Dominion to sell Salem Harbor Plant property
- City of Salem has received \$200,000 in grant money from the Clean Energy Center to plan to study of future reuse of the property²⁵

City of Salem: Salem Harbor Power Station Site Assessment Study²⁶

²⁴http://www.alottaplot.com/2010/6/Dominion_to_Sell_Blaney_Street_Property_to_City_of_Salem

²⁵ <http://www.wickedlocal.com/salem/news/x401380468/Power-plant-s-closure-likely-to-effect-Salem-s-budget#axzz1M5DnLA7I>

²⁶ City of Salem, The Salem Harbor Power Station Site Assessment Study, http://www.salem.com/Pages/SalemMA_DPCD/studies

- Three proposed categories for future property use:
 1. Alternative power: repurposing coal-fired technology to natural gas turbines
 - Viable option because of gas line located less than a mile off shore of Salem Harbor Plant
 - Medium cleanup costs, short timeline, less footprint, medium public benefit
 2. Renovation & change of use
 - High cleanup costs, high level of project uncertainty, long timelines, high public benefit
 3. Demolition & development
 - High cleanup costs, high level of project uncertainty, high public benefit, long timelines, recent economic conditions unfavorable

Challenges/Site Issues:

- **Economic:**
 - Salem Harbor currently has 150 employees
 - Dominion is the city's largest taxpayer
 - In 2010 paid \$4.75 million in taxes (To put that in perspective, the power plant pays five times more than the city's No. 2 taxpayer)²⁷—Potentially large financial impact on Salem without proper planning
 - Plant site previously sold for \$46 million in 2005
- **Land Use Regulations/Laws:**
 - Site falls under MA Chapter 91 Law (Public Waterfront Act), which preserves at least part of future use of the property for public water uses. Ensures that tidelands are utilized for water-dependent uses or serves a proper public purpose which provides greater benefit than detriment
 - Water dependent uses can include: marinas, facilities from fishing and water based recreation, parks and boardwalks, aquariums and marine research or education, passenger transportation (ferries, taxis, shuttles, cruise ships), shore protection related structures, marines industrial facilities
 - Designated Port Area (DPA): established to maintain existing port infrastructure that was built over time at great public expense, prevent development that exclude water-dependent industries, promote water-dependent marine industrial uses (which depend on marine transportation or large volumes of water for cooling, process, or treatment)
 - Marine industrial uses include: facilities that rely on water or goods transferred by ships, storage of goods from ships, commercial fishing and processing, boatyards, dry docks
 - DPA uses may occupy 25% of property—would allow shops operated by self-employed tradespersons, eating and drinking establishments,

²⁷ <http://www.salemnews.com/local/x364973836/Plant-closing-Whats-next>

storefront retails and service facilities, small scale administrative offices
(exclude uses: residential, hotels, recreational boat facilities)

- Plant built in 1951: knowledge of materials used and contamination will be less extensive--A cleanup was previously done on the site in the last decade
- Time and money: short window for planning development and need to replace Dominion's revenue
- Other possible issues: Salem's current Harbor plans, regional access, traffic and local access, access to natural gas, substation easement (about 6.7 acres of land), third party ownership, tax generation and employment, pending regulations, market conditions
- Summary of Potential Land Use:

Land Use Types	Allowable Under Chapter 91?	Allowable under DPA?	Public Benefit?	Tax Revenue Generation	Market Supportable?
Energy Uses	Y	Y	Low	High	Y
Marine Terminal	Y	Y	Medium	Medium	Y
Recreational Use/Trails	Y	Limited	High	None	Y
Institutional Uses (Aquarium, ect).	Y	Maybe	High	Low	Y
Office	Maybe	Limited	Medium	High	Limited
Retail	Maybe	Maybe	Medium	High	Limited
Residential	Maybe	N	Medium	Low	Y

- Potential Cost Options:
 - Upgrade Units 3 and 4 (coal and coal units) for environmental compliance: \$450, 200, 000
 - Partial site clean up: replace with gas turbine plant with land left over (about 48 acres) for possible redevelopment:
 - Simple cycle (just gas turbine) and **no** redevelopment: \$350 million—limited demolition and no site cleanup
 - Simple cycle and redevelopment: \$520 million—demolition and site cleanup
 - Combined cycle (gas turbine heat recovery steam generators, and steam turbines) and **no** redevelopment: \$700 million—limited demolition and no site cleanup
 - Combined cycle and redevelopment: \$870 million—demolition and site cleanup
 - Full site clean up with plant demolition: \$170 million

Salem's Bright Future Plan²⁸

2008 Economic Development Report of Site by Brattle Group:²⁹

- Brattle Group studied the potential economic impacts of redeveloping Salem Harbor Plant in terms of taxes and revenues generated by city-operated facilities and income to Salem residents from jobs created—does not estimate magnitude of costs to Salem for the changing the use of the property
- Approximately 20% of the site is used for a transmission station, expected to remain in place when Plant is shutdown and demolished--would still provide some tax payments to the City of Salem
- Approximately 42 acres available for mixed-use redevelopment after subtracting development of roads and other public facilities
- Assume private developer to buy land, responsibility to clean up property would be factored into the sales price
- Mixed-used development to include single-family homes, an apartment complex, a large hotel, retail and office space and a marina
- After the fifth year of starting project (after demolition and construction), the property could produce approximately \$5.6 million in taxes and revenues to the City of Salem, with 300 construction jobs per year during the 2 year construction phase and roughly 600 new long-term jobs
- Income provided by new jobs combined with the expenditures of an assumed additional 850,000 tourists could produce an additional \$14.5 million in new income to the local economy by 2013 (based off of 2008 estimates)--this does not account for additional expenditures required to support new development
- Mixed-use development would also produce: increase in property taxes, increase in property values from the removal of power plant, hotel occupancy tax, marina revenue

²⁸ http://stoptheplantnow.org/salems_bright_future.htm

²⁹ <http://visionforsalem.org/>

Alexandria, VA : Potomac River Waterfront Development

Potomac River Generating Station³⁰

- Began operating in 1949
- Previously owned by Mirant, now owned by GenOn
- Located on about 28 acres
- Nearby:
 - Waterfront property
 - Surrounded by apartments and offices
 - Marina Towers—only 300 yards away
 - Mount Vernon bike trail
 - About five miles from the U.S. Capitol building, three miles from the Ronald Reagan Washington National Airport
- 2008 City of Alexandria/Mirant Settlement Agreement:³¹
 - City of Alexandria made deal with Mirant to end lawsuits and Mirant committed to spend \$34 million deal to improve air quality and install pollution controls (mainly for particulate matter)
 - City has control over selection and implementation of controls—money placed in an escrow account
 - City engineering study for contractors to implement settlement
 - Phase I completed: technology installed for reducing fugitive dust (dust from plant not produced by coal stacks)
 - Phase II not completed: for stack fine particulate emissions control--install baghouses and electrostatic precipitators—estimated to be fully completed in fall 2013
 - May 2011: Only \$1 million of the settlement money has been spent since deal created
 - City taxpayers have spent more than \$200,000 since the 2008 settlement for a lobbying firm to represent Alexandria in Richmond on issues concerning the plant.
 - Use money to retire the plant
- Recent violation in May 2011:³²
 - Virginia Department of Environmental Quality issued \$275, 562 fine for violations to GenOn
 - Violations for excessive visible emissions; not turning in paperwork on emissions monitoring; use of coal with an ash content higher than the permit

³⁰ www.oe.energy.gov%2FDocumentsandMedia%2FDOE_Special_Environmental_Analysis2.pdf

<http://www.alextimes.com/news/2011/mar/15/environmentalists-heat-up-opposition-to/>

³¹ <http://www.connectionnewspapers.com/article.asp?article=351133&paper=59&cat=104>

http://www.chesapeakeclimate.org/detail/news.cfm?news_id=656

<http://www.alexandrianews.org/2011/06/genon-moves-forward-with-implementation-of-environmental-control-measures/>

³² <http://www.alexandrianews.org/2011/05/genon-resolves-violations-at-potomac-river-generating-station/>

limit; use of one railcar of sodium bicarbonate instead of the permitted sodium sesquicarbonate (Trona) for the control of sulfur dioxide; use of used oil rather than the permitted new oil for boiler combustion and failure to include all Continuous Emissions data on a VDEQ compliance form.

- Not complying with several conditions of the state-operating permit settlement of 2008

Potomac Yard Development Project³³

-Site Background:

- **Location:** directly north of Potomac River Generating Station, along the Potomac River
- Once one of the busiest rail yards operated by Richmond Fredericksburg and Potomac (RF&P) from about 1906 to 1989
- 295-acre brownfield site:
 - Site divided into two main parcels by a railroad corridor: Potomac Yard and Potomac Greens
 - Potomac Yard subdivided into landbays
- Environmental Contamination:
 - Declared toxic waste site in 1987—Superfund site
 - Large portions of site with petroleum or heavy metal contamination released from underground tanks, above-ground diesel tanks, surface spills, and runoff from repair and maintenance activities from rail yard³⁴
 - Fill material to level rail yard contaminated with cinder ballast, bottom ash from coal burning—lead, arsenic
 - 1995-1998: EPA and RF&P cleanup
- Redevelopment planning underway for over 20 years—first began with City updating 1974 Master Plan
- New zoning changes to create Coordinated Development Districts (CDD) for redevelopment
- Demographics of surrounding development area:
 - Potomac West--2.13 square mile area which roughly includes the Arlandria, Del Ray, Lynhaven, Mount Jefferson, and Rosemont neighborhoods
 - Population: 22,331
 - Race: White non-Hispanic, 44%; Hispanic, 27.9%; Black non-Hispanic, 23%
 - Age: Under 18, 20.3%; 18-64, 73.9%; Over 65, 5.8%
 - Mean Household Income: \$69,684
 - Tenure: Owner-occupied, 44.2%; renter-occupied, 55.8%
 - Housing Type: single-family detached, 25.3%; single-family attached, 31.5%; 2+ units attached, 43.1%
- \$3 to \$4 billion cost
- **Adjacent Uses To Potomac Yards/Generating Station:**

³³ <http://alexandriava.gov/PotomacYard>

³⁴ www.ccpyttransit.com/Appendix%25207_Hazardous%2520%26%2520Contaminated%2520Materials.pdf

- Route 1
- Old Town and Del Ray
- Ronald Regan Washington National Airport
- George Washington Memorial Parkway
- Downtown Washington D.C.

Before Pictures with Landbays Labeled at:

<http://www.metrocliving.com/urbantrekker/2008/07/potomac-yard-up.html>

-Two Coordinated Development Districts (CDD) Created by City: CDD #19 and CDD #10

CDD #19: Landbay F--North Potomac Yard Project.³⁵

- 69-acre site currently owned by CPYR, Inc.
- Vision Statement: The Plan envisions North Potomac Yard as an environmentally and economically sustainable and diverse 21st Century urban, transit-oriented, mixed-use community that is compatible with adjacent neighborhoods. The Plan seeks to create a regional destination with diverse built and natural spaces where people want to spend time in a wide variety of pursuits.
- Current Use on Site: Potomac Yard Retail Center
 - 600,000 square feet of retail—strip mall and parking lot
 - To be redeveloped for high density urban area—rebuilt to accommodate stores
- Site planned to include up to 7.5 million sq. ft. of development with:
 - 1100 Residential Units
 - 1,930,000 sf Office
 - Mix of 3,395,000 sf (or 3,395 units) of Office or Residential Units
 - 930,000 sf Retail
 - 170,000 sf Hotel
 - about 10 acres of open space
- Redevelopment phases to continue over next 20 to 30 years
- To include new Metrorail station
- Land Use/District subdivisions:
 - Three neighborhoods: Crescent City Gateway Neighborhood, Market Neighborhood, and Metro Square
- Sustainable Features: Green Roofs, walkability and transit, open space networks, native plants, rainwater collection systems, natural irrigation, greywater recycling, toward minimum of LEED Silver rating,
 - Goal for North Potomac Yard to be carbon neutral by 2030
- Estimated Cost \$3 billion to \$4 billion

CDD #10: Potomac Yard³⁶

³⁵ <http://alexandriava.gov/planning/info/default.aspx?id=46416>
<http://www.alexandrianews.org/2010/2010/06/12/alexandria-approves-potomac-yards-redevelopment/>
alexandriava.gov/uploadedFiles/planning/info/potomacyard/rez09-0001.pdf

- 165-acre site
- Intended plan for:
 - 1,926 Residential Units
 - 1,932,000 sf Office
 - 135,000 sf Retail
 - 625 Room Hotel

--Landbay Areas/Neighborhoods

- Landbay A--Potomac Greens:
 - 33- acre residential neighborhood, townhouses
 - Consists of 244 residential units and approximately 20 acres of open space
 - Opened in 2005, completed
- Landbay C—Potomac Plaza—completed
 - 4-acre commercial node, with about 1.5 acres of open space
 - Retail: Slater’s Lane
- Landbay D--Rail Park:
 - Requires subsequent approval for design and programming of the park.
- Landbay E—Four Mile Run
- Landbay H
 - Approved for construction of office space, street retail, and residential units
- Landbay K—Potomac Yard Park
 - Construction began in Spring 2011
 - About 26 acre park/open space
- Landbay I (22 acres) and Landbay J (16 acres): mixed use, two finger parks, a neighborhood park, will begin
 - construction Spring 2011
- Landbay G--Town Center
 - 19.5 Acres
 - Approved for approximately 700,000 square feet of office uses, 183,000 square feet of retail uses, 414 multi- family units, and 623 hotel rooms
 - Includes The Station, completed
 - **The Station at Potomac Yards³⁷**
 - Opened in October 2009
 - Total Cost: \$34 million, 1.1 acres
 - Mixed-use commercial and residential space
 - 64 Residential Units:
 - 44 affordable housing units for households with incomes at or below 60% of the area median income
 - 20 units have rents affordable at the “workforce level”, at or below 80% AMI
 - Residences, community room, and first floor commercial space owned by Alexandria Housing Development Corporation (AHDC)

³⁶ <http://www.potomacyardalexandria.com/index.html>

³⁷ <http://www.housingalexandria.org/station.html>--<http://alexandriava.gov/PotomacStation>

- Fire Station 209: located on the ground level—LEED-Silver certified—owned by City
- Commercial space leased to Edward Jones Financial Advisors
- Apartments: awarded the Earthcraft Multifamily Project award
- Partnership between City, Alexandria Housing Development Corporation, developers Pulte and Centex (Potomac Yard Development, LLC), Virginia Housing Development Authority (VHDA)
- Financing/Contributors:
 - Potomac Yard Development, LLC provided \$6.6 million to help finance the fire station portion of the project and an additional \$7.5 million for the residential portion
 - Loans and grants from City
 - \$8.6 millions in low income housing tax credit equity
 - VHDA loans of \$8.35 million
 - **RBC Capital Markets:** low income housing tax credit investor for the project
 - Design and Construction: LeMay Erickson Willcox Architects, Rust Orling Architecture, Whiting Turner Contracting Company

Highlighted Open Space Plans:

- Potomac Greens Park (17.5 acres)
- Potomac Yard Park (28.79 acres)
- Finger Parks (.8 acres)pt
- Howell Park (.7 acres)
- Potomac Plaza (1.5 acres)
- Rail Park (4.2 acres)
- Four Mile Run Park (4.4 acres)
- Braddock Field (2 acres)

Transportation:

-Planned bicycle paths and transit systems (buses)

-Potomac Yard Metro Station³⁸

- To be built in Landbay F--North Potomac Yard
- Financing for Plan:
- City created Tier I special tax district
 - \$0.20 per \$100 assessed value tax on Potomac Yard properties

³⁸ http://voices.washingtonpost.com/dr-gridlock/2010/12/potomac_yard_metro_vote_passes.html?wprss=dr-gridlock
<http://oldtownalexandria.patch.com/articles/city-council-establishes-special-tax-district-for-potomac-yard>
<http://www.potomacyardmetro.com/>
<http://voices.washingtonpost.com/local-breaking-news/alexandria-passes-funding-plan.html>
http://www.washingtonpost.com/local/potomac-greens-neighborhood-excluded-from-special-tax-district/2011/05/23/AGrEP1BH_story.html

- The revenue from the tax district will be added to developer contributions and a soft tax increment financing area, or TIF, to pay bond debt financing over 30 years.
- Took effect on Jan 2011
- Will generate about \$500,000 a year in new tax revenues
- Affects property owners in Landbays F, G, H and a small portion of I
- City created Tier II special tax district—after Metro opens (near 2017)
 - 10 cents per \$100 of a property's assessed value, which would not be levied until Jan. 1 of the calendar year after the Metro station opens
 - The city is expecting revenues from the first year of these taxes to be about \$400,000, according to city documents.
 - Development area Old Town Greens excluded from tax district area due to zoning conditions
 - Potomac Greens excluded due to property owner protest: \$200,000 loss in revenue due to exclusion
 - Landbays I and J
- Cost: \$270 million construction cost
 - Over \$81 million in contributions from CPYR, Inc.
- Other financing from Washington Metropolitan Area Transit Authority, City and property owners in proximity to station
- Will be operated by the Washington Metropolitan Area Transit Authority—with both Blue and Yellow line route services
- Plan to start construction in 2014 and open in 2016
- The new Metrorail station at Potomac Yard would:
 - • Improve access to the regional Metrorail system
 - • Accommodate current and future population and employment
 - • Increase transit ridership and mode share (the percentage of commuters using Metrorail as their transportation mode)
 - • Enhance safety for transit riders and pedestrians
 - • Provide cost-effective and financially feasible solutions
 - possible raise property value in the area

Other completed areas nearby:

- One and Two Potomac Center was completed in November 2005 and houses several EPA offices.

Lessons:

- Private/Public Partnership: city and Potomac Yard Development, LLC
- Long-term planning-began in 1990s
- Sustainable development planning
- Potential for Potomac River Generating Station
 - Nearby location
 - Pollution violations, public health concerns
- Special tax districts/CDD for funding

- Metrorail station

Factors Affecting the Adaptive Reuse of Obsolete Power Plants:³⁹

- Proximity to an urban center/location, industrial and architectural features, aesthetic or historical appeal
- Sustainability and smart growth initiatives in inner cities to decrease urban sprawl
- Appeal of old power plants with large turbine-generator halls/large open space desirable, versatility in new functions, maintains powerhouse identity
- Relationship to the surrounding urban area, besides location, such as proximity near bodies of water and the infrastructure often connected to plants like rail access
- Who currently owns the facility and who or what is/are the driving force(s) behind creating a new use for the facility
 - Often still owned by an utility company (sell for profit or owner converts for internal company use—warehouse)
 - External forces outside the utility company: economic development groups, museum committees, businesses, or government entities such as municipalities
- Variety of development options: public, commercial, entertainment uses, private, offices, residential, or public and private together

Other Lessons:

- Key industrial and architectural features of the building can be reused and thereby preserved. Furthermore, seemingly disadvantageous elements such as the smokestack or internal elements like coal hoppers can be repurposed to the owner or tenants' advantage
- The vast open space of the turbine halls is a vital and desirable feature to maintain as part of the powerhouse identity and allow for great versatility in repurposing
- Public access can effectively be incorporated into these buildings and their size and floor plates lend themselves well to commercial and entertainment uses. Even private repurposing, such as offices or residences, can incorporate publicly accessible spaces in lobbies or cafés
- Redevelopment projects that purposefully include the buildings make the structures integral parts of the neighborhoods as they move forward—often preserving the buildings context
 - encourage adjacent development

³⁹ Richard A. Scadden, "Adaptive Reuse of Obsolete Power Plants"
www.westonsolutions.com/about/news.../ScaddenAWMA0101.pdf
www.hudsonriverpowerhouse.com/docs/Preservation_plan.pdf

