Green Building and Deconstruction Report

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Prepared by CPED—Development Services for the Office of Council Member Linea Palmisano

City of Minneapolis

Department of Community Planning & Economic Development - CPED

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Executive Summary

This report was produced as part of a 2014 staff direction related to the 1-4 residential unit ordinance changes authored by 13th Ward Council Member Linea Palmisano. The directive to the Department of Community Planning and Economic Development is to study methods and tools to establish incentives related to sustainable construction and demolition affecting 1-4 unit residential development.

Staff examined the current state of green building in Minneapolis, including incentive programs currently being offered by the City, and compared this data with research into incentives offered by peer cities and market research on the incentives most valued by developers. The research found that the largest factor preventing builders from incorporating green building strategies is real or perceived cost increase, that the second-largest factor is lack of knowledge of green building, and that tax abatement, density bonuses, and expedited permitting appear to be the most prevalent and cost effective incentives nationwide.

Staff identified three strategies to reduce the environmental impact of demolitions: intensive deconstruction, salvage/non-structural deconstruction, and construction and demolition (C&D) waste diversion. Staff evaluated the current prevalence of each of these three strategies in Minneapolis, as well as the state of various components of the private sector involved in each. After investigating programs used by other cities, staff examined the feasibility of implementing them in Minneapolis.

Six strategies are recommended for further advancement:

- Forming an internal committee to coordinate development of current and future incentive programs related to green building strategies, deconstruction, and C&D waste diversion.
- Expanding the availability of density bonuses to projects that incorporate green building best practices.
- Exploring the possibility of including more green building strategies in the Residential Point System.
- Developing a C&D diversion ordinance requiring the recycling of a portion of C&D waste.
- Collecting additional data on deconstruction markets specific to Minneapolis, including cost analysis, appraisal knowledge/availability, secondary markets for reclaimed products, and evaluation of potential stock for demolition.
- Becoming a regional leader in the field of deconstruction by increasing the number of city-owned properties undergoing intensive deconstruction.

Green Building

Green Building in the City of Minneapolis

In order to evaluate the prospect of implementing additional green building incentives in Minneapolis, it is necessary to give a brief overview of green building certification programs, as well as incentive programs currently offered by the City of Minneapolis.

State and National Programs

LEED

The US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) program recognizes projects that meet a number of environmental benchmarks. LEED provides a variety of certification programs that fall into five primary categories, each of which have their own subcategories: building design and construction, interior design and construction, building operations and maintenance, neighborhood development, and homes. LEED for Homes certification requires that projects meet standards tailored specifically to residential properties of 1-3 stories. According to the USGBC, there are 150 LEED-certified properties in Minneapolis, approximately 25 percent of Minnesota's total. Of Minneapolis' 150 LEED projects, 74 fall into the building design and construction category and 18 fall into the homes category. Of the 30 largest commercial office markets in the United State, Minneapolis-Saint Paul was found by CBRE in a 2014 study to have the highest LEED adoption rate, with 39.4% of all office space in the market being LEED-certified. LEED is generally considered the most prestigious green certification program—it is one of the programs most often incorporated into government policy, the program with the most name-recognition among the general public, and the program most desired by builders. As of 2013, over 45,000 properties in the United States were registered with LEED, and 71% of projects over $50 million referenced LEED in some way within project specifications.

Energy Star

Since 1991, the U.S. Environmental Protection Agency's Energy Star program has been providing certifications of energy efficiency to products across a variety of industries. Although the program is most recognized by the public for its certifications of appliances and specific building materials and components, the program has included certifications for entire buildings since 1996. Energy Star's certification programs for buildings, similar to others, evaluate both the energy used to construct the building, as well as the building's energy performance after construction. Energy Star does place more weight in energy performance benchmarks, and is in a way more similar to LEED's operations and Maintenance certification than its building design and construction certification. According to the same 2014 CBRE report, the Minneapolis-Saint Paul commercial office market had the highest rate of Energy Star adoption, with 62.8% of all office space being Energy Star certified.

Green Building Adoption Index							
Rank	Market	% of Buildings Total Green	% of sq. ft. of Buildings Total Green	% of Buildings Energy Star	% of sq. ft. of Buildings Energy Star	% of Buildings LEED	% of sq. ft. of Buildings LEED
1	Minneapolis/St. Paul	29.7	77.0	22.9	62.8	12.1	39.4
2	San Francisco	18.0	67.2	14.9	52.3	7.6	39.2
3	Chicago	20.0	62.1	16.9	50.9	7.5	31.8
4	Houston	22.2	54.8	18.3	45.0	8.9	32.1
5	Atlanta	26.6	54.1	22.1	42.5	9.0	25.0
6	Los Angeles	20.8	49.7	17.3	40.0	6.7	23.3
7	Denver	16.3	49.3	13.5	40.6	6.7	27.5
8	Seattle	10.8	46.6	6.7	28.0	6.0	31.8
9	Miami	19.4	46.0	14.5	29.7	7.1	23.6
10	Washington, D.C.	15.5	42.1	11.9	32.5	6.7	20.5
11	Philadelphia	16.9	36.7	12.9	30.0	5.0	12.0
12	Walnut Creek	9.9	34.8	7.1	21.0	4.5	20.1
13	San Diego	9.2	34.6	7.0	27.2	2.9	12.6
14	Manhattan	24.4	34.6	19.8	24.3	9.7	18.9
15	Orange County	9.8	33.8	9.0	31.4	2.3	10.1
16	Boston	10.4	33.3	7.6	24.5	3.6	14.9
17	Dallas/Ft. Worth	13.0	32.7	10.3	25.4	4.3	13.7
18	San Jose	10.8	31.6	7.6	16.9	4.1	17.5
19	Sacramento	12.0	31.4	8.9	24.3	4.4	15.4
20	Portland	10.8	30.8	6.5	22.3	5.3	17.1
21	Phoenix	8.7	28.0	6.9	23.2	3.1	12.1
22	Tampa	6.8	27.0	5.3	24.1	2.3	8.9
23	St. Louis	7.4	24.2	4.8	17.7	3.7	9.2
24	Milwaukee	5.8	20.0	3.3	15.8	3.0	7.6
25	New Jersey	13.0	17.2	11.0	13.4	3.4	6.3
26	Baltimore	8.1	16.9	3.0	7.6	5.7	10.6
27	Detroit	5.7	16.3	4.7	14.5	1.4	2.6
28	Stamford	6.7	13.9	4.6	9.3	2.4	5.8
29	Kansas City	3.3	13.5	1.8	9.6	1.8	5.4
30	Pittsburgh	1.8	10.0	0.6	6.3	1.3	6.3

Table 1: Green Building Adoption Rates in Major Office Markets. CRBE, 2014.

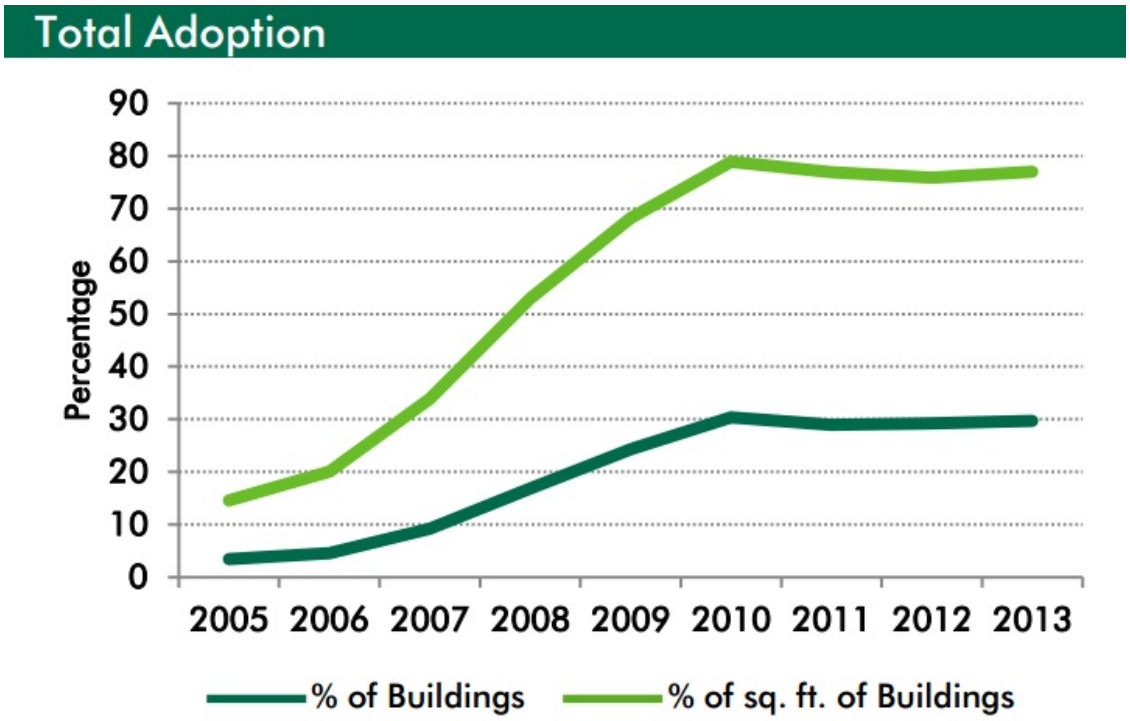


Figure 1: Green Building Adoption in the Minneapolis/St. Paul Office Market. CBRE, 2014.

Green Globes

The Green Globes certification program, of the Green Building Initiative, has much in common with LEED, but has a few key differences. The advantage that Green Globes has over LEED is that it does not require the same level of training and certification for professionals completing required documentation. The program functions similarly to LEED in that a rating is earned by achieving a specific number of points spread across a variety of categories, with higher certifications being awarded to projects that achieve more points. The two programs are also very similar in content, sharing about 85 percent of the strategies for which they award points. It should also be noted that the documentation process for Green Globes is more streamlined. This results in a far less expensive certification process that causes less of a burden on builders. However, Green Globes lacks the prestige and recognition that LEED has earned.

Minnesota B3 Sustainable Building 2030 Standards

The Minnesota B3 Program (Buildings, Benchmarks, and Beyond) studies building performance and develops standards and strategies for measuring and increasing performance of buildings receiving state funds. Most buildings participating in the B3 program are state-owned, but some buildings developed by local governments (including housing) have participated. The B3 Guidelines (B3-MNBG) are a series of required and recommended performance standards, among them energy and waste efficiency standards (SB 2030). To date, five projects in the City of Minneapolis have met SB 2030 standards, approximately 12 percent of Minnesota's total.

Minnesota Greenstar

The Minnesota Greenstar program is a certification program unique to Minnesota. The program was founded in 2007, in part with funds from the Minnesota Pollution Control Agency, and was a partnership between the Builders Association of the Twin Cities, the National Association of the Remodeling Industry, and the (now defunct) Green Institute. The program is today a registered affiliate of the LEED for Homes program. Minnesota Greenstar has provided training in green building strategies to hundreds of professionals in Minnesota. Minnesota Greenstar has also partnered with the Alliance for Environmental Sustainability to expand Greenstar beyond Minnesota to other states in the Midwest. Although Greenstar does offer certification for new construction, the program's focus has always been on sustainable renovations to existing homes. While Greenstar does not have the name recognition of LEED, its tailoring to local climate and construction makes it a leading certification program for residential remodels in the Upper Midwest.

City of Minneapolis Programs

Planned Unit Development Amenity Points

The Minneapolis Zoning Code currently incentivizes a number of green building strategies through its amenity requirements for planned unit developments (PUDs). All PUDs are required to achieve at least 10 amenity points. Additionally, PUDs may seek alternative compliance to a variety of zoning standards, subject to approval by the Planning Commission, each of which requires the PUD to achieve an additional five amenity points. Between one and 10 points are awarded per amenity. Green building strategies included among eligible amenities include meeting the standards of various green building certification programs as well as individual features. An abridged version of Table 527-1, including only those amenities which promote green building strategies, is located below.

Points	Amenity	Standards
10	Green Roof	Installation of an intensive, semi-intensive, modular, or integrated green roof system that covers a minimum of fifty (50) percent of the total roof area proposed for the development.
10	Leadership in Energy and Environmental Design (LEED)	The proposed development shall meet the minimum standards for LEED Silver Certification. The project does not have to achieve actual LEED certification; however, the developer must submit the LEED checklist and documentation to the City, approved by a LEED Accredited Professional (LEED-AP), that shows that the project will comply with LEED Silver requirements.
10	Minnesota Sustainable Building Guidelines (B3-MSBG)	The proposed development shall meet the minimum requires and recommended MSBG standards that would equal a LEED silver certification. The developer must submit documentation to the City including the MSBG checklist and a letter, signed by the owner or a licensed design professional, that shows that the project will comply with

		MSBG required and recommended standards equivalent to a LEED Silver certification. The recommended standards utilized should be those that most closely align with City goals.
5	Conservation of the built environment	Significant renovation, rehabilitation and adaptive reuse of an existing building(s), rather than demolition.
5	Garden(s) or on-site food production	Permanent and viable growing space and/or facilities such as a greenhouse or a garden conservatory at a minimum of sixty (60) square feet per dwelling unit to a maximum required area of five thousand (5,000) square feet, which provide fencing, watering systems, soil, secured storage space for tools, solar access, and pedestrian access as applicable. The facility shall be designed to be architecturally compatible with the development and to minimize the visibility of mechanical equipment.
5	On-site renewable energy	Use of a photovoltaic or wind electrical system, solar thermal system, and/or geothermal heating and cooling system for at least seven (7) percent of the annual energy costs in new and existing buildings. Geothermal systems shall not use vapor compression systems. The applicant must demonstrate that the quantity of energy generated by the renewable energy system(s) meets the required percentage through a whole building energy simulation.
5	Energy efficiency	Utilization of energy design assistance programs or commissioning to ensure that building systems are designed to operate efficiently and exceed the Minnesota State Energy Code by at least thirty (30) percent of the annual energy costs. The developer must submit documentation to the City including a letter signed by the owner or a licensed design professional that shows the project will comply with this standard.
3	Natural Features	Site planning that preserves significant natural features or restores ecological functions of a previously damaged natural environment.
3	Reflective roof	Utilize roofing materials for seventy-five (75) percent or more of the total roof surface having a Solar Reflectance Index (SRI) equal to or greater than the values as required by the US Green Building council (USGBC) for low-sloped and steep-sloped roofs.
3	Shared bicycles	Public access to shared bicycles available for short-term use as defined in section 541.180. Applies to mixed-use and non-residential uses only. A minimum of ten (10) shared bicycles per one (1) commercial use must be provided to qualify as an amenity. Bicycle parking spaces and racks shall be located in an area that is convenient and visible from the principal entrance of the building.
3	Shared vehicles	Access to a share passenger automobile available for short-term use. For residential uses, a minimum of one (1) car per one hundred (100) dwelling units is required.
1	Enhanced stormwater management	Provide capacity for infiltrating stormwater generated onsite with artful rain garden design that serves as a visible amenity. Rain garden designs shall be visually compatible with the form and function of the space and shall include for long-term maintenance of the design. The design shall conform to requirements of the stormwater management plan approved by public works.

1	Recycling storage area	Provide and easily accessible area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including but not limited to paper, corrugated cardboard, glass, plastics and metals. The recycling storage area shall be located entirely below grade or entirely enclosed within the building.

Table 2, Abridged Table 527-1 Amenities.

Residential Point System

As part of the administrative site plan review process for 1-4 unit residential developments, all new homes must achieve a minimum of 17 of 27 available points in the residential point system. Points are awarded for design features that meet City goals in new 1-4 unit residential development. Among other design features, points are available for two environmental features: meeting Minneapolis' stormwater quality credit program (discussed below), and locating a healthy number of trees on the site.

Stormwater Charge Credit

Minneapolis currently promotes the use of stormwater best management practices (BMPs) such as rain barrels, rain gardens, and retention ponds, by waiving either 50 percent or 100 percent of a property's monthly stormwater charge, depending on the impact of the BMP. To qualify for such programs, an application must be completed and approved by City staff.

Green Homes North

Green Homes North is a CPED program, started in 2012, that is providing funding for the construction of 100 single-family homes on vacant CPED-owned lots in North Minneapolis. All homes built as part of the program must meet either the Minnesota Green Communities Standards or LEED for Home. Through 2014, 47 homes have been completed.

Barriers to Green Building

According to a 2007 NAIOP Research Foundation survey of 53 developers and 37 architects, the biggest factor preventing builders from incorporating green building strategies is real or perceived cost increase; the second-largest factor is a lack of knowledge of green building. Since the 2007 survey, contractors have become significantly more aware of green building techniques, thanks in part to the wide availability of education programs such as those conducted by Greenstar and the former Green Institute. At the same time, the number of LEED-accredited professionals has grown, rising 83% 2009-2013. While education programs and increased prevalence of green building strategies have lessened barriers posed by lack of knowledge, cost remains the primary barrier to adoption of green building strategies.

Peer City Analysis

Cincinnati

In 2007, the City of Cincinnati began offering property tax abatement for LEED-certified commercial projects, as well as residential projects of 5 units or more. The abatements cover up to 75 percent of increased property value for commercial properties, and are valid for up to 15 years for new construction and 12 years for renovations. For residential properties the abatements cover up to 100 percent of increased property value and are valid for up to 15 years for new construction and up to 10 years for renovations. This program has dramatically increased the number of projects seeking LEED certification in Cincinnati. For comparison, Cincinnati has approximately 74 percent of Minneapolis' population, but more than four times the number of LEED-certified properties. While Cincinnati's program has been successful in incentivizing green development, it comes at significant cost: under Cincinnati's ordinance, a LEED-certified $415,640 home with an improved value of $296,670 will receive a total of $97,320 in tax credit over 15 years.

Chicago

The City of Chicago offers expedited permitting to projects that meet specific thresholds for sustainability, completing permit reviews in as little as 15 business days, compared to typical review times of 45-90 days. Additionally, the city offers grants to small businesses to install sustainable features on their property. The City of Chicago has also made a concerted effort to incorporate significant green features into city projects, in an effort to create local case studies for the incorporation of sustainable building strategies and to educate contractors.

Seattle

While Seattle offers several green building programs, their most significant incentives are density bonuses, in the form of both increases to maximum permitted floor area ratio (FAR) and maximum permitted height. To qualify, projects must be seeking LEED silver certification or higher.

Arlington County, VA

Arlington County offers two significant incentives for green building. The first is an FAR increase, dependent on the level of LEED certification achieved. The second, unique incentive is the creation of a green building fund. All new construction is assessed a fee of $0.03 per square foot, which is added to the fund. After a project achieves LEED certification, it is refunded its contribution to the fund. Remaining funds are used to educate developers, contractors, and community groups on green building strategies.

Potential Incentive Programs for Minneapolis

Tax Abatement

NAIOP found that direct financial incentives, such as tax abatement, were the most desired by developers. While some cities, such as Cincinnati, have had significant success utilizing tax abatement to incentivize green development, this comes at significant cost. Staff believes that other incentive programs can be successful in promoting the increased utilization of green building strategies while having significantly less financial impact on the City.

Density Bonus

According to the developers surveyed by NAIOP, density bonuses were the most desired incentive other than direct financial incentives. Minneapolis already offers a variety of density bonuses for PUDs through alternative compliance, including up to a 20 percent increase in maximum permitted GFA, increases in maximum permitted height, reductions in required yards, and up to a 20 percent increase in maximum permitted dwelling units. It could be possible for Minneapolis to look at increasing the amenity standards for PUDs, adding to the number of points required by default or required to meet alternative compliance. This could allow the City to further leverage its existing green building incentives. One of the largest benefits to this approach is that it would require little increased effort to administer. Since it is already an existing program, only minor adjustments would be required, both to ordinance and to staff procedures. The City could also consider allowing similar density bonuses for non-PUDs, provided the development incorporates significant green strategies.

Expedited Permitting

According to both architects and developers surveyed by NAIOP, expedited permitting was the second most-desired incentive, not including direct grants and tax abatement. While expedited permitting has been used successfully as an incentive by some municipalities in other states, it is likely not a feasible option for Minneapolis to pursue. Due to Minnesota's "60-day rule" which requires that all land use applications be reviewed for completeness within 15 days of receipt and approved or denied within 60 days of receipt, many Minnesota cities, including Minneapolis, already have a fairly rapid turnaround time for processing permits. Due to the speed at which Minneapolis currently reviews permits, it would be difficult to provide any meaningful improvement in expediency without jeopardizing the thoroughness of the review process.

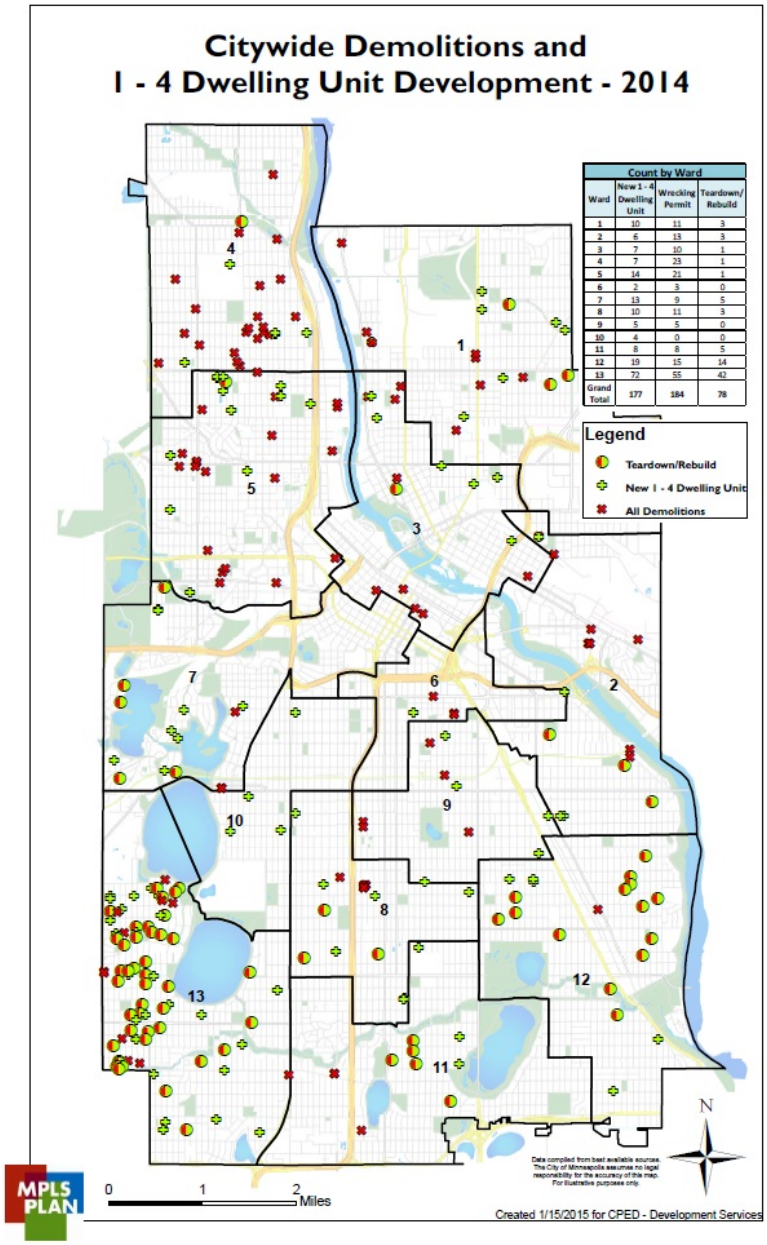
Reduced or Waived Permit Fees

While local governments elsewhere in the country have found some success incentivizing green building techniques through reduced or waived permit fees, staff believes that due to financial impact, this type of incentive is likely not the best for Minneapolis to pursue. The costs of permit review are financed by revenue from the building permit fees themselves. If any permit fee reductions were implemented as part of an incentive program, an additional funding stream would have to be found to make up for lost revenue.

Deconstruction

Construction & Demolition Waste in the City of Minneapolis

In 2014, the City of Minneapolis issued 184 wrecking permits, the vast majority of which were for single family homes. The demolition of a typical 2,000 square foot home generates approximately 127 tons of Construction and Demolition (C&D) waste. Nationally, C&D waste accounts for over 40 percent of waste by ton sent to landfills. In order to become a zero-waste city, or even to catch up with other US cities exhibiting the highest recycling rates, Minneapolis must significantly reduce the amount of C&D waste that ends up in our region's landfills.



Count by Ward			
Ward	New 1 - 4 Dwelling Unit	Wrecking Permit	Teardown/ Rebuild
1	10	11	3
2	6	13	3
3	7	10	1
4	7	23	1
5	14	21	1
6	2	3	0
7	13	9	5
8	10	11	3
9	5	5	0
10	4	0	0
11	8	8	5
12	19	15	14
13	72	55	42
Grand Total	177	184	78

Alternatives to Traditional Demolition and Landfill Disposal

Other than encouraging the continued use of existing structures, three primary ways to reduce C&D waste sent to landfills from demolitions exist: intensive/structural deconstruction, salvage/non-structural deconstruction, and C&D waste diversion.

Intensive Deconstruction

Intensive deconstruction involves the complete disassembly of a structure, recovering as much material as possible for reuse in future construction. This can include electrical and plumbing fixtures, pipes, wiring, concrete and asphalt, doors, windows, millwork, brick, stone, siding, and lumber. The typical 2,000 square foot home can contain up to 6,000 board-feet of reusable lumber.

Intensive deconstruction has some limitations. Because of the nature of the work, it is particularly labor intensive. Building materials must be removed in a methodical fashion to prevent damage and ensure safety of workers. Oftentimes, shoring must be built to hold portions of the home up while structural members are removed. As a result, deconstruction requires a large crew who must be trained to deconstruct a home safely. Additionally, the crew must operate under the supervision of master carpenters and engineers. Deconstruction of a single-family home takes approximately 20 days, compared to 1-3 days for traditional demolition.

While the increase in time and labor required to deconstruct a home results in significantly higher cost, resale of recovered materials can potentially make up for this additional cost, depending on market factors. The condition of a home and its method of construction both significantly affect the resale value of the home's materials. For example, OSB sheathing and vinyl siding are more difficult to reuse than traditional wood siding or masonry, and hardwood floors can be reused while carpet must be disposed of. Distinctions between types of wood and masonry also exist, often based on the time and place where they were produced (e.g. Saint Louis brick is more valuable than most other types, and old-growth timbers are more valuable than modern dimensional lumber). The feasibility of deconstruction varies with the housing stock of a region, dependent on age and construction techniques. Because the only contractor currently conducting deconstructions in the region is a relatively new company and operates as a non-profit, there is insufficient data on the financial feasibility of widespread adoption of intensive deconstruction techniques in Minneapolis. While for-profit deconstruction contractors do operate in other regions of the country, differences in building design and construction, as well as local markets for materials resale, make straightforward comparisons with contractors in other regions difficult. Further, more intensive study is necessary to fully understand the financial feasibility of deconstruction in our region.

Salvage/Non-structural Deconstruction

Salvage, or non-structural deconstruction, involves the removal of those components of a home that are most easily reused or are of a particularly high value, including electrical and plumbing fixtures, pipes, doors, millwork, and hardwood floors. In order to be salvageable, materials must be in good condition and there must be enough demand for used building materials retailers, architectural salvage

companies, or antique stores to be able to sell the product. In some cases, considerations must be made to ensure that salvaged products meet current code requirements. This can limit reuse and should be evaluated when conducting a cost analysis.

C&D Waste Diversion

C&D waste diversion involves the recovery of recyclable materials from C&D waste streams. Recyclable materials include metals (steel, iron, brass, copper, aluminum), aggregate (concrete, asphalt, brick, masonry), fiber (cardboard, paper), wood, shingles, and drywall.

Waste diversion is not as ideal as deconstruction, as significant energy is expended transporting and processing recycled and reused construction material. Typical diversion rates for projects seeking to recycle as much material as possible are between 70 and 75 percent and can reach as high as 90 percent. It should be noted, however, that not all recyclable materials can be made back into consumer products. For example, wood is often used as fuel in biomass gasification plants, and small scraps known as “fines” (between 10 and 30 percent of C&D waste) are typically processed and used as cover for landfills.

Market Readiness

In order to bring any of the above strategies into widespread use in Minneapolis, a developed market must exist in the region, consisting of companies that sell salvaged material (e.g. building material reuse centers and architectural salvage stores), companies that process and recover material (e.g. recyclers/waste haulers), and companies that productively utilize the recovered material (e.g. as part of new consumer product, for energy generation).

Deconstruction Contractors

Currently there is only one contractor in the region preforming intensive deconstruction, Better Futures Minnesota. Better Futures Minnesota is a non-profit group that employs chronically unemployed men, providing job training, mentorship, and steady employment. The homeowner receives tax credit equal to the appraised value of donated materials. For the typical 2,200 square foot home with no unusual abatement or site issues, it costs approximately $4,250 for Better Futures to deconstruct the home than it would to have it demolished, and the property owner will receive approximately a $4,500 tax credit.

Prior to closing in 2011, the Green Institute’s ReUse Center also conducted deconstruction. The Green Institute was a non-profit operating out of East Phillips from 1995 to 2011, focused on the reduction of C&D debris. The institute closed due to financial difficulties. At the time, the interim operations manager cited the institute’s business model of deconstructing properties, rather than relying on direct donations, as a contributing factor in its closure.

Market for Salvaged Materials

Building Material Salvage Centers

Currently there are only two building material salvage centers in the region. Better Futures Minnesota operates a warehouse where materials salvaged from deconstruction projects are sold to contractors. Habitat for Humanity also operates a ReStore in New Brighton. The ReStore accepts tax-deductible donations of a wide variety of salvaged building materials. In addition to their metro location, Habitat for Humanity operates 12 other ReStore locations in Minnesota. Building material salvage centers sell recovered building materials—either removed from buildings being demolished, or discarded as scrap from new construction. These retailers sell a variety of products including dimensional lumber, sheathing, masonry, and more.

In addition to physical salvage centers, many used building materials are sold online, on websites such as Craigslist, the Minnesota Materials Exchange, and K-Bid.

Architectural Salvage Retailers

Twelve architectural salvage retailers are currently operating in the region. They typically sell high-quality fixtures, millwork, and architectural detailing in a retail or warehouse environment.

Accent Store Fixtures	Minneapolis
Architectural Antiques	Minneapolis
Art & Architecture	Minneapolis
Bauer Brothers Salvage	Minneapolis
Better Homes & Garbage	Minneapolis
City Salvage	Minneapolis
Gilded Salvage Antiques	Minneapolis
Historic Stone Co	Minneapolis
The Showcase Place	Minneapolis
All State Salvage	Saint Paul
Nielson Store Equipment	Saint Paul
Northwest Architectural Salvage	Saint Paul

Reclaimed Wood Suppliers

Staff is aware of five suppliers of reclaimed wood in the region. These suppliers typically utilized old growth timber framing, siding, and flooring. Most buildings presently being demolished in Minneapolis do not contain old-growth lumber. As these are often small enterprises that primarily market to general contractors rather than the public, it is likely that other reclaimed wood suppliers exist in the region.

Rhodes Hardwood	Minneapolis
Superior Woods	Minneapolis
Pete's Hardwood Floors	Saint Paul
Manomin Timbers	Hugo
Antique Woodworks	Gaylord

C&D Recyclers

There are five disposal companies in the region that offer C&D diversion services that meet B3, USGBC, and LEED standards of up to 75 percent diversion. Not only are these companies capable of providing high diversion rates, they are also experienced in completing appropriate documentation to help projects achieve certification. The documentation required by LEED and similar programs is very similar to what is required by many local governments that regulate C&D diversion. Examples of both can be found in the appendices.

Company	Location	Tons C&D Processed /YR
Atomic Recycling	Minneapolis	135,000
SKB Inc	Minneapolis/Rosemount	
Dem-Con Companies	Shakopee	92,000
Shamrock	Blaine	
Veit	Rogers	

Peer City Analysis

In 2012, the Northeast Recycling Center identified 128 local governments with ordinances mandating some level of C&D diversion. The vast majority of these (118) are located in California. The list of governments identified in the NERC report is contained in Appendix 1 (p.28). Since 2012, additional local governments nationwide have implemented similar mandates, and a few have developed direct reuse mandates. The C&D diversion and reuse ordinances of several peer cities are summarized below.

Seattle

The City of Seattle enacted an ordinance in 2012 requiring the recycling of 100 percent of all asphalt, brick, and concrete, as well as the reuse of 20 percent and recycling of 50 percent of all remaining C&D material. Seattle is one of only a few cities nationwide to implement mandated reuse standards. Seattle implemented a phased approach, applying the requirements to various types of C&D waste in stages 2012-2015 (*Figure 2*) rather than all at once in order to allow builders, haulers, and recycling companies to adapt to the new regulations. As part of this phased approach, each category of waste allowed for an education period during which the relevant forms were included as part of the permitting process but participation was optional and no fines were issued. As of 2013, 66 percent of

Seattle's C&D waste was being diverted from landfills, a number expected to surpass 70 percent by full implementation in 2015. Projects valued at over $30,000 are required to submit a Waste Diversion Report (*Appendix 2, p.31*), and projects that include the demolition or construction of at least 750 square feet of habitable space are additionally required to submit a Waste Diversion Plan (*Appendix 3, p.33*), as well as undergo a salvage assessment, conducted by a registered salvage verifier.

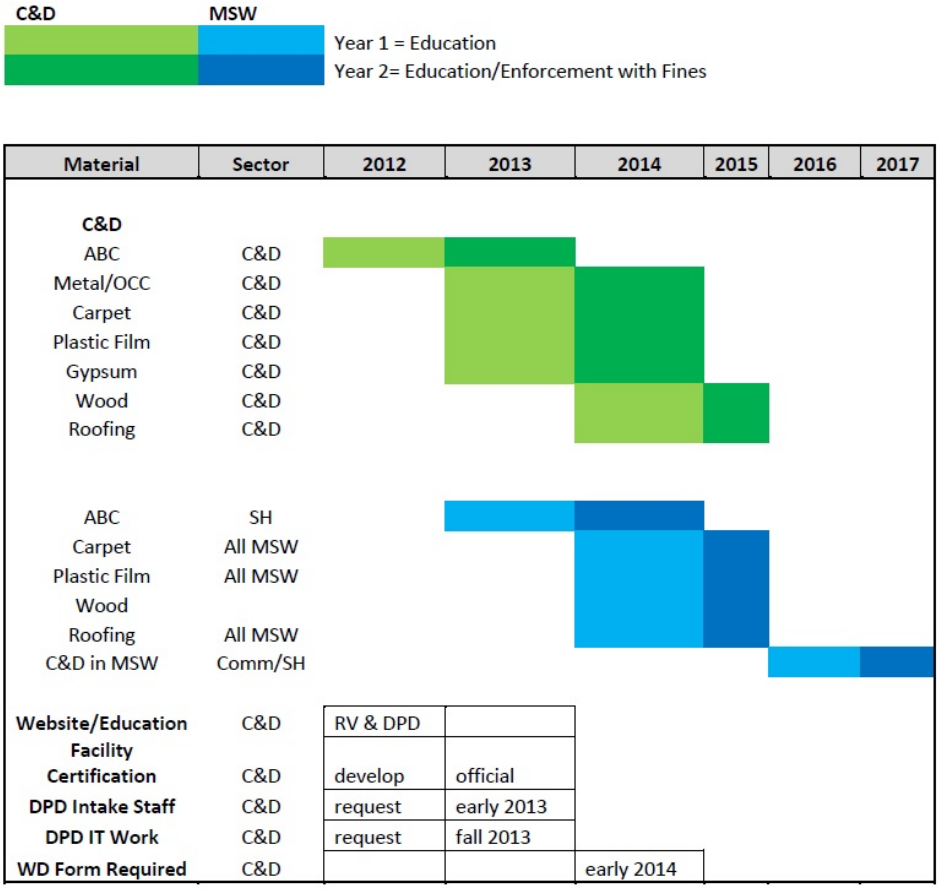


Figure 4: Seattle Bans in Solid Waste Implementation Schedule. City of Seattle, 2012.

San Francisco

Since 2006, the City of San Francisco has required that all C&D waste be sent to registered C&D disposal facilities, which are certified by the City to meet a minimum 65 percent diversion requirement. Waste haulers are prohibited from hauling C&D waste directly to landfills regardless of project value. Projects valued at over $50,000 are required to submit a Debris Recovery Plan (*Appendix 4, p.35*).

Portland

The City of Portland began mandating 50 percent recycling of C&D waste in 1995. In 2008, this standard was increased to 75 percent. Additionally, since 2009, Metro (Portland's body of regional

government) has required that all solid waste, regardless of project size, be processed by a registered recycler prior to being sent to traditional disposal facilities. Projects valued over $50,000 are required to submit a Debris Management Form (*Appendix 5, p.37*).

Contra Costa County, CA

Since 2012 Contra Costa County (located in the northeastern Bay Area) has required that all C&D waste be sent to registered C&D disposal facilities, which are certified by the Solid Waste Disposal District to meet a minimum 50 percent recycling requirement.

San Diego

In 2008, San Diego began mandating that all C&D waste be sent to registered C&D disposal facilities, which are certified to meet a minimum 50 percent recycling requirement. Projects affecting greater than 1,000 square feet (demolition, construction, or alteration) must submit a Waste Management Form (*Appendix 6, p.38*), along with a deposit (*2014 deposit schedule, Appendix 7, p.40*) that is refunded pending the submission of weigh tickets.

Chicago

The City of Chicago began mandating in 2007 that projects involving the demolition or construction of more than 4,000 square feet meet a minimum requirement of 50 percent C&D waste recycling. Qualifying projects are required to submit a Debris Compliance Form, along with a notarized affidavit from the disposal company.

Cook County, IL

In 2012, Cook County (excluding the City of Chicago) enacted an ordinance mandating 70 percent diversion for all demolitions, with an additional 5 percent reuse requirement for structures containing 1-4 residential units. All demolitions must complete a Debris Diversion Plan.

Potential Incentive Programs for Minneapolis

Reuse Requirements

Few municipalities have enacted ordinance mandating the reuse of building material from structures undergoing demolition, primarily due to the lack of market for used building material. Our region is no exception—currently there is only one contractor preforming structural deconstruction in our region, and there are few used building material retailers. While mandating intensive deconstruction and material reuse would have the greatest environmental impact, due to market conditions, it is not feasible for Minneapolis to do so under present conditions.

Mandated Deconstruction Appraisal

Some municipalities have found success in increasing reuse of used building materials by requiring that all properties undergo a deconstruction or salvage assessment. This can take two forms—either an assessment of which materials would sell if salvaged, or an appraisal and estimate for a full deconstruction. While options like this may be viable for Minneapolis in the future, the currently underdeveloped market for used building materials prevents this from being presently feasible.

Mandated Salvage Access

Another program with the potential to decrease the environmental impact of demolition is mandated salvage access to buildings slated for demolition. Currently, the region has a healthy market of architectural salvage companies. However, many of the homes presently being demolished in Minneapolis do not contain easily salvaged materials that will sell in the current environment. Although no hard data is available, staff has made the observation that readily salvageable and marketable materials are already being regularly removed by salvage companies and contractors for resale. In addition, this type of requirement is difficult to administer and opens up issues related to who is qualified to salvage, how to mandate public access to private property, what type of liability homeowners and salvagers might have, what types of insurance may need to be carried, and what role the City would have in facilitating this. This type of incentive would also have a limited environmental impact, as the increase in material reused would likely be relatively low. Due to potential difficulties in administering such a requirement, limited environmental impact, and significant economic impact on builders, staff does not recommend pursuing this method at this time.

Diversion Requirements

The City of Minneapolis should further explore the possibility of creating a program mandating a certain percentage of C&D waste be diverted from landfill disposal. In the Twin Cities a number of disposal companies already offer recycling of 75 percent of C&D debris, and are experienced in documenting this in order to satisfy requirements of green building certification programs. Staff believes that the regional C&D market is well-developed and could accommodate a diversion requirement similar to those adopted by many other cities, if the City took a phased approach. Taking cues from Seattle's phased implementation, Minneapolis could develop a system that includes a rising bar to help further develop the C&D recycling market, as well as educate both builders and contractors. Additionally, because diversion requirements exist in so many other cities, there are already good models for successfully administering a range of such ordinance.

Expedited Permitting

While expedited permitting has been used successfully as an incentive by some municipalities in other states, it is not a feasible option for Minneapolis. Due to Minnesota's "60-day rule", the speed at which Minneapolis currently reviews permits is near optimal, and it would be difficult to provide any meaningful improvement in expediency without jeopardizing the thoroughness of the review process.

Reduced or Waived Wrecking Permit Fees

While local governments elsewhere in the country have found some success incentivizing deconstruction through reduced or waived permit fees, staff believes that due to financial impact, this type of incentive is likely not the best for Minneapolis to pursue. The costs of permit review are financed by revenue from the building permit fees themselves. If any permit fee reductions were implemented as part of an incentive program, an additional funding stream would have to be found to make up for lost revenue.

Recommended Next Steps

Form Internal Committee

Staff believes that if the City is to further explore any of the recommended options to incentivize green building techniques, deconstruction, or C&D waste diversion, an internal committee should be formed, consisting of staff members from various departments and work groups within the City. Suggested groups to have representation on the committee include: Public Works—Solid Waste, City Coordinator's Office—Office of Sustainability, the City Attorney's Office, interested Council Members, CPED—Land Use, Design, and Preservation, CPED—Zoning, CPED—Development Review Center, CPED—Housing & Real Estate Development, CPED—Long Range Planning, Health Department—Environmental Services, and the Mayor's Office. This committee could coordinate development of existing and future programs related to green building, deconstruction, and C&D waste diversion.

Residential Point System

Staff believes that because density bonuses may be particularly problematic for low-density residential uses, the best incentive for the City of Minneapolis to explore for promoting green building techniques in 1-4 unit residential construction is the residential point system. The residential point system is a part of the administrative site plan review process for 1-4 unit residential development (*Appendix 8, p.41*). As part of the review, all new homes must achieve a minimum of 17 of the 27 available points, which are awarded for design features that meet City goals. Currently, points are available for two environmental features: meeting Minneapolis' stormwater quality credit program, and locating a healthy number of trees on the site. Minneapolis should investigate the possibility of awarding points for more green building strategies on the table. One benefit of this incentive is that it would be easy for staff to administer as it falls within an already existing portion of the administrative site review process.

Density Bonuses

Staff believes that the best green building incentives for the City of Minneapolis to further explore are density bonuses for larger developments. Density bonuses have been shown to be the most-desired green building incentive (aside from direct grants and tax abatement) by both developers and architects. Unlike tax abatement and grants, density bonuses require little financial commitment from the City in order to implement. Additionally, the City of Minneapolis has experience administering density bonuses for a variety of development types, including already existing PUD density bonuses for green building.

The City of Minneapolis may choose to explore the possibility of creating provisions to grant density bonuses for green building strategies for more development types than just PUDs. These

provisions should take cues both from Minneapolis' existing provisions for density bonuses, as well as those used by other local governments, such as Seattle and Arlington County, VA.

C&D Diversion Ordinance

Staff believes that the best way for Minneapolis to reduce the environmental impact of demolition in the near term is to develop a C&D waste diversion ordinance. Thanks to the large number of examples of C&D diversion ordinances that have already been implemented across the country, Minneapolis is in a position to develop a highly successful ordinance that is easy for contractors to comply with and for staff to fairly administer. In part due to the prevalence of LEED and other green certification programs which may require C&D recycling, as well as environmentally-conscious local companies, several regional disposal companies have already developed significant experience in achieving high rates of C&D diversion, as well as completing appropriate documentation.

The City may choose to develop a potential C&D diversion ordinance. Hennepin County is currently exploring the possibility of adopting its own C&D diversion ordinance. The County is expected to release a detailed report on the capacity of regional C&D recycling facilities and their ability to accommodate increased volume in May of this year. Any ordinance that is developed should be done in coordination with other local governments. Potential partners could include the City of Saint Paul, Hennepin County, Ramsey County, or any other Twin Cities counties and municipalities that are also interested in developing a C&D diversion ordinance. If possible, a single ordinance, or substantially similar ordinances, should be adopted across the region. By creating a single ordinance that covers as much of the region as possible, this coordination will save industry stakeholders time and money, and will also reduce the amount of education and enforcement required by overseeing agencies. Additionally, a region-wide ordinance would have the advantage of reducing the potential of an ordinance that may be seen as burdensome to drive development from the City. Any ordinance adopted should look to incorporate a phased implementation process, taking cues from other local governments that have successfully done so.

Study & Develop Deconstruction Market

Staff believes that the best way for Minneapolis to reduce the environmental impact of demolition in the long term is to become a regional leader in deconstruction in an attempt to develop the local deconstruction market. Intensive deconstruction and the reuse of building materials have the greatest effect on reducing the environmental impacts of demolition. However, the local market for used building materials is not well-established or prepared for the widespread adoption of intensive deconstruction. There is currently a lack of contractors performing deconstruction, a lack of accurate data available for cost analysis, and a lack of professional appraisal staff to evaluate materials, and traditional builders have yet to take steps to systematically incorporate used building materials on a large scale. Until a cost analysis for Minneapolis, and the region, can be completed, it is unknown what other factors may impact the success of a deconstruction program.

To better understand and collect data on the feasibility of deconstruction, it is staff's recommendation to work with experienced local contractors to increase the number of City-owned properties to be deconstructed rather than demolished. The City has contracted Better Futures Minnesota to deconstruct several city-owned homes in the past, and should continue to work with Better Futures Minnesota. However, many City-owned properties have not qualified as candidates for deconstruction due to deterioration, structural issues, and lack of salvageable materials. Until programs are established, the City can encourage other contractors to develop deconstruction capabilities and assist with data collection. In addition to reducing the environmental impact of these demolitions, the City's leadership as a property owner utilizing deconstruction techniques will also develop the capabilities of local contractors and the market for used building materials.

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NERC | Northeast Recycling Council

Celebrating 25 Years of Uniting the Ten Northeast States for Environmentally Sound Materials Management

SUMMARY OF U.S. STATE AND MUNICIPAL C&D REGULATIONS AND REQUIREMENTS

In the U.S., the solid waste management hierarchy places source reduction, reuse, and recycling as the highest priorities. This is applicable to residential and business-generated materials. It is also applicable to construction and demolition materials (C&D). More and more state and municipal regulations and requirements are mandating the recycling of C&D.

C&D materials are generated in new construction, remodeling, deconstruction and demolition. Common components of new construction in the U.S. include: wood; concrete/masonry; wallboard; metal; corrugated cardboard; bottles and cans; and trash. Demolition debris includes: concrete; wood; trash; scrap iron; asphalt; brick; and roofing. Many of these materials can be recycled and made into new products— clean, untreated wood can be made into new wood products (i.e., furniture, and wood chips and mulch for landscaping purposes); gypsum wallboard can be ground into a gypsum powder that is then manufactured into new plasterboard or applied as a soil amendment; and asphalt shingles can be recycled into cold patch, new shingles, or hot mix asphalt.

In 2011, the Northeast Recycling Council (NERC) completed the *Disposal Bans & Mandatory Recycling in the United States* (http://www.nerc.org/documents/disposal_bans_mandatory_recycling_united_states.pdf)—a summary of state recycling regulations and material disposal bans in the U.S. Of the 49 states and District of Columbia (DC) reported in this study, 13 (28%) have some form of C&D material disposal ban or recycling requirement. Following are some of the highlights:

- Sixteen C&D materials are either banned from disposal or are required to be recycled in the reporting states.
- Six states ban the disposal of friable asbestos, which is commonly found in acoustic ceilings and tiles, many types of plasters, wallboard, joint compound or "mud" and thermal insulation for water heaters and pipes made before 1978.
- Five states ban the disposal of wallboard.
- Ten states require corrugated cardboard to be recycled, and one state bans its disposal.
- Seven states ban the disposal of mercury containing devices found in thermostats and in other devices.
- Seven states require glass containers to be recycled, and four states ban its disposal.

Table 1 below provides a summary of the information provided by the states.

Table 1. States with C&D Disposal Bans (B) and/or Mandatory Recycling Ordinances (R)

C&D Material	States												
	CT	DC	MA	ME	NH	NJ	ND	PA	RI	SD	VA	WV	WI
Asbestos (friable)	B	B					B	B			B	B	
Asphalt Shingles & Pavement		B	B									B	
Brick		B	B									B	
C&D Wood		B	B									B	
C&D Metal	R	B	B		B		R	B	R			B	
Concrete		B	B									B	
Corrugated Cardboard	R	R	R	B	R	R		R	R	R	R		R
Glass (containers)	R	R	B	R	R	R		B	R	B	R		B
Land Clearing Debris												B	B
Metal (containers)	R	R	B			R		R	R		R		B/R
Mercury Containing Devices		B	B	B			B		B			B	B
Paint	B	B										B	B
Plastic (containers)		R	B			R		B/R	R	B			B/R
Scrap Metal	R					R	R	R	R				
Wallboard		B	B		B	B						B	
Wood (clean)	B		B						R				

NOTE: Glass, plastic, and metal containers are part of the waste generated by workers at C&D job sites.

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Further research into municipal C&D recycling ordinances revealed that many regional state and federal agencies, as well as municipalities, do not maintain records about how C&D is handled at the municipal level. Instead, they track the promotion of C&D diversion at the state level, the kinds of C&D data tracking the states conduct (whether it is through voluntary methods or required by rule), and the licensing and permiting process for solid waste faciltities and activities relating to the handling of C&D.[1]

Iowa offers a model C&D recycling ordinance (www.iowadnr.gov/portals/idnr/uploads/waste/cndord_demorecycling.pdf).

NERC identified C&D recycling ordinances in 128 municipalities; 118 in California (25% of all municipalities in the state), 2 in Connecticut, 2 in Florida, 2 in Illinois, 1 in Missouri ,12 in North Carolina, and 1 in Washington. Tables 2 and 3 lists of communities per state. Table 4 lists the C&D materials commonly included in municipal recycling ordinances.

Table 2. California Municipalities with C&D Material Recycling Ordinances				
Alameda	Coachella	Huntington	Piedmont	Santa Clara
Albany	Colma	Indian Wells	Pleasant Hill	Santa Clarita
Aliso Viejo	Contra Costa	La Canada Flintridge	Pleasanton	Santa Fe Springs
Antioch	Cotati	La Mesa	Pomona	Santa Monica
Apple Valley	Dana Point	Livermore	Port Hueneme	Santa Rosa
Arroyo Grande	Duarte	Lynwood	Portola Valley	Santee
Artesia	Dublin	Manhattan Beach	Rancho Cucamonga	Sierra Madre
Asheboro	East Palo Alto	Marin	Rancho Mirage	Signal Hill
Atherton	El Centro	Menlo Park	Rancho Santa	South El Monte
Baldwin Park	El Dorado	Mission Viejo	Redlands	South Gate
Bellflower	Emeryville	Monrovia	Redondo Beach	South Lake Tahoe
Berkeley	Fairfield	Monterey Park	Sacramento	Stockton
Brawley	Forest City	Moraga	San Buenaventura	Tulare
Brea	Foster City	Morro Bay	San Carlos	Tustin
Brentwood	Freemont	Needles	San Clemente	Union City
Brisbane	Fresno	Newark	San Diego	Vallejo
Burlingame	Gardena	Norwalk	San Francisco	Vista
Butte	Glendora	Oakland	San Gabriel	Walnut Creek
Calaveras	Half Moon Bay	Ontario	San Jose	Willits
Calexico	Hawaiian Gardens	Orinda	San Juan Capistrano	Winters
Camarillo	Hawthorne	Oro Loma	San Leandro	Woodland
Castro Valley	Hayward	Palo Alto	San Louis Obispo	Woodside
Chula Vista	Hidden Hills	Pasadena	San Marino	
Clayton	Highland	Pico Rivera	San Mateo	

[1] E.g., New Jersey regulates the facilities able to accept C&D. Municipalities' involvement with C&D is limited to the issuance of a building or demolition permit.

Table 3. Municipalities with C&D Material Recycling Ordinances in Other States					
Connecticut	**Florida**	**Illinois**	**Missouri**	**North Carolina**	**Washington**
Bridgeport	Lee	Chicago	Kansas City	Asheboro	Seattle
New Haven	Sarasota	Northbrook		Chapel Hill	
				Cramerton	
				Efland	
				Four Oaks	
				Glen Lennox	
				Hillsborough	
				Mount Olive	
				Pinehurst	
				Randleman	
				Smithfield	
				Stanley	

Table 4. Common C&D Materials Included in Municipal Recycling Ordinances	
Aluminum	Pallets
Asphalt	Paper
Brick	Pipe
Buckets	Plastic
Cardboard	Roof Tile
Carpet & Carpet Padding	Steel
Concrete	Shingles
Land Clearing Debris	Wallboard
Lumber	Wood

Waste Diversion Plan & Deconstruction and Salvage Assessment

Project Number _____

Owner/Contact Name _____ **Phone** _____

A **waste diversion plan** is required at application intake for all construction and demolition projects with an area of work greater than 750 square feet. If the project involves demolition, complete the **deconstruction and salvage assessment** on page 2. The waste diversion plan must be submitted at application intake or e-mailed to DPD_Plans_Routing@seattle.gov.

Use the drop-down lists to fill in the columns below

- Next to each potential waste material, indicate if the diversion method will likely be "Reuse", "Salvage Off Site", "Recycle Source Separated", "Recycle Comingled", or "Landfill". Bold cells indicate frequently salvageable/reusable materials.
- If a specific material is diverted in 2 different ways (for example, you might salvage some wood for reuse and then recycle the rest), use the "Wood" category to fill in one way the material was diverted and use the "Other" cell to identify wood and fill in the second way the wood was diverted.
- You may use your own form as long as it identifies material, diversion method, hauler and receiving location.
- Attach additional pages as needed.

Material	Diversion Method	Hauler	Receiving Facility
Individual Materials			
Asphalt Paving *			
Asphalt Shingles			
Brick (whole)*			
Carpet/padding			
Concrete *			
Cardboard *			
Glass			
Gypsum/Drywall *			
Land Clearing			
Metals *			
Plastics			
Plastic Film Wrap			
Rock/Gravel			
Soil/Sand			
Wood			
Other:			
Other:			
Hazardous Waste			
Recyclable Comingled Material			
List materials to be recycled:			
Mixed Non-recyclable Debris			

** These materials should not be disposed in construction site disposal containers and at transfer station disposal areas. For gypsum scrap this landfill disposal ban applies to new gypsum scrap only*

I will submit the Waste Diversion Report as required by SPU

Keep a copy of this Waste Diversion **Plan** to help complete the Waste Diversion **Report** which should be submitted directly to SPU within 60 days of final inspection approval from DPD. A copy of the Waste Diversion Report & directions for how to submit it to SPU are found here:

http://www.seattle.gov/util/ForBusinesses/Construction/CDWasteManagement/RecyclingRequirements/WasteDiversionReport/index.htm

For technical questions on how to fill out the Waste Diversion Plan, Deconstruction Salvage Assessment, or Report, please contact Seattle Public Utilities at: WasteDiversionReport@seattle.gov

Waste Diversion Plan & Deconstruction and Salvage Assessment

A **deconstruction and salvage assessment (DSA)** is required for all projects with an area of work greater than 750 square feet that involve demolition. Use the deconstruction and salvage assessment to identify which of the potential materials listed on the waste diversion plan might be salvageable. The DSA must also be submitted at application intake or e-mailed to DPD_Plans_Routing@seattle.gov.

Be sure the correct person fills out this form:

- The owner or owner's representative may fill out the DSA if the project involves interior alterations that include demolition or if materials being removed from the project are going to be used in the new project or at an alternate project site. Alternate Address or Project Number: _____
- If a whole building is being deconstructed or demolished, the form must be completed by a salvage verifier that meets one of the following:
  - An established salvage and reuse retail company
  - A licensed contractor specializing in deconstruction
  - A demolition company with knowledge of local and current salvage retail markets
- You or a salvage verifier may use an alternate form as long as specific materials have been identified for salvage.
- A list of possible salvage verifiers may be found through resources such as The Northwest Building Salvage Network: **http://nbsnseattle.org/**
- The salvage verifier may check off the box below if there is nothing of value to salvage

Salvage Verifier (If required) _____

Contact Name *Company* *Phone*

It has been determined that there is nothing of value to salvage from this structure or project site

Building Component	Specific Material (Use drop-down list)	Notes
Wall Covering		
Wall Covering		
Insulation		
Plumbing		
Plumbing		
Lighting Fixtures		
Wood		
Wood		
Wood		
Wall Sheathing		
Wall Sheathing		
Doors		
Doors		
Flooring		
Flooring		
Carpet		
Cabinets		
Windows		
Roofing		
Siding		
Siding		
Miscellaneous		

Waste Diversion Report
Seattle Public Utilities

Please complete this report for your construction or demolition project within 60 days of receiving the Final Inspection Approval from the Seattle Department of Planning and Development. It can be scanned and E-mailed to WasteDiversionReport@seattle.gov or printed out and mailed to:

Gabriella Uhlar-Heffner, Seattle Public Utilities
700 5th Avenue, Suite 4900
P.O. Box 34018
Seattle, WA 98124-4018

An electronic Waste Diversion Report and more information are found at:
http://www.seattle.gov/util/ForBusinesses/Construction/CDWasteManagement/RecyclingRequirements/WasteDiversionReport

DPD Project Number:	
Project Address:	
Applicant Name:	
Contact Phone Number:	
Contact Email Address:	
Estimated Project Square Footage:	
Asbestos Abatement Performed?	Yes / No

Diversion Records

Material Type	Diversion Method	Quantity	Unit of Measure	Hauler	Receiving Facility

- **Typical Material Types**, **Haulers** and **Receiving Facilities** are listed on the back of this form though other entries will be accepted.
- **Diversion Methods** includes 1) Reuse on site, 2) Salvage off site, 3) Recycle source separated, 4) Recycle commingled and 5) Disposal
- **Unit of Measure** includes 1) Tons, 2) Pounds, 3) Cubic yards and 4) Number of items (for salvage)

Waste Diversion Report
Seattle Public Utilities

Typical Waste Diversion Report Choices

Receiving Facilities	Receiving Facilities (continued)	Material Type
Again	Second Use Building Materials	Appliances (cooking, laundry, refrigeration)
All Wood Recycling	Stoneway Concrete	Asphalt Paving
Arrow Metals	Squak Mountain	Asphalt Roofing Shingles
Bedrock Industries	Sutta Company	Brick
Busy Beaver	The Recycle Depot	Cardboard
Cadman	The ReStore	Carpet/Padding
CDL Recycle	United Recycling	Clean Wood (Unpainted and untreated)
Cedar Grove Composting	Valley Recycling	Concrete
CEMEX	Watson Asphalt and Paving	Electrical (fans, Light fixtures etc.)
Certainteed Gypsum	Waste Management Eastmont	Ferrous Metals
Dirt Exchange	West Seattle Recycling	Fixtures/Doors/Cabinets/Countertops
Drywall Recycling Services	WG Recycling	Furniture (chairs, sofas, tables etc.)
Earthwise	*Other*	Garbage
Evergreen Shingle Recycling	**Hauling Companies**	Glass or Windows
Fruhling Sand & Topsoil	Bobby Wolford Trucking & Demolition	Gypsum/Drywall (New Constr. Scrap)
Icon Materials	Bulldog Demolition	Gypsum/Drywall (Demo or Remodel)
Independent Metals	Busby Junk Removal	Insulation (Fiberglass, Cellulose, Rigid)
Kangeley Rock	CleanScapes	Land Clearing Debris
Lakeside Industries	Commercial Waste Reduction& Recycling	Masonry, Tile, Stone
Lautenbach Industries	Construction Waste Management	Mixed Plastics
Lloyd Enterprises	Demolition Man	Non-Ferrous Metals
L. Wibbleman	Drywall Recycling Services	Other Flooring
Lynwood Recycling	EWC Group	Pallets/Crates
Miles Resources	Gary Merlino Construction	Mixed Plastics
National Pallet Service	Grayhawk Recycling	Painted/Treated Wood
New West Gypsum	Happy Hauler	Plastic Film Wrap
Non-Ferrous Metals, Inc.	Hungry Buzzard	Plumbing (sinks, toilets, pipes)
Northwest Metals & Salvage	Drywall Recycling Services	Rock & Gravel
Pacific Iron & Metal	Industrial Container Services	Soil or Sand
Pacific Modular	Junk B Gone	*Other*
Pacific Topsoils	Lautenbach Industries	
Pacific Urethane	Lloyd Enterprises	
Palmer Coking Coal Co.	Marilyn's Recycle	
Rainier Pallet and Crating	Nuprecon	
Rainier Wood Recyclers	Pallet Services	
Recovery One	PCI Democon	
Renton Concrete Recyclers	Performance Abatement	
Republic Black River	Rainier Pallet & Crating	
Republic Third & Lander	Rainier Wood Recyclers	
Resource Recovery Services	ReNu Recycling	
Resource Woodworks	Republic Services	
Sam's Recycling	Rhine Demolition	
Schnitzer Steel	Rubbish Works	
Seadrunar Recycling	Seattle Rubbish Removal	
Seattle Iron and Metal	United Recycling & Container	
Squak Mountain Materials	Waste Management	
Seattle South Transfer Station	*Other*	

DEMOLITION DEBRIS RECOVERY PLAN WORKSHEET

Construction and Demolition (C&D) Debris Recovery Program

City and County of San Francisco

Environment Code Chapter 14; Ordinance No. 27-06; SFE Regulations 06-05-CDO

PLAN TYPE: ☐ **NEW PERMIT APPLICATION** ☐ **FINAL REPORT**

DATE DEMO COMPLETED _____

General Instructions:

- Demolition Debris Recovery Plan (DDRP) WORKSHEET must be completed by person conducting demolition and submitted to San Francisco's Department of Environment (SFE) for all Department of Building Inspection (DBI) Full Demolition Permit applications (Form #6). Submit to SFE at address or fax at bottom of this page.
- The DDRP must demonstrate that the demolition project will achieve a minimum of 65% diversion from landfill. Mixed C&D debris material taken to a San Francisco Registered C&D Facility will be credited at 65% diversion. No C&D debris material can be taken directly to landfill or be put in garbage.
- After SFE approves the DDRP, it will be returned to you to submit to DBI before issuance of the Demolition Permit. Detailed instructions for completing a final report will be included with the approved DDRP.
- Demolition permits will not be issued by DBI without an approved DDRP.
- A FINAL REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER COMPLETION OF DEMOLITION.

Demolition Permit Application No. _____ Permit Application Date _____

Project Address _____ Project Block/Lot#_____

Demolition Permit Applicant _____ Phone (___)_____

Demolition Permit Applicant Address _____

Contact Name _____ Phone (___)_____

Contact Address _____ Fax (___)_____
(if different from above)

_____ E-Mail _____

Describe building being demolished: Type _____ Square Footage _____

Complete the Diversion Rate Table on the reverse side of this worksheet indicating the disposition by material type of all project materials. See www.sfenvironment.org/c&d for possible facilities or markets to take materials. **For new permit applications,** provide ESTIMATED tons. **For final reports**, provide ACTUAL tons based on receipts you have received from facilities. Information included in the final report is subject to verification by SFE.

Instructions for completing the table on the reverse side of this worksheet; all materials are reported in **TONS**

Column 1 – This is the **total tons** of materials generated from this project listed by material type;

Column 2– Materials that will be separated on site in usable condition taken to a salvage facility for reuse. Also includes materials reused on site such as wood forms, and inerts used as backfill, etc.

Column 3 – Materials separated on site that will be taken to a facility to be reprocessed into a new product. This includes source separated materials such as wood, metal, cardboard, drywall, landscape debris, etc.

Column 4 – Materials that are not source-separated on site and are taken to a San Francisco Registered C&D Facility that will process mixed C&D materials for recovery. Mixed C&D materials taken to a SF-Registered C&D Debris Facility will be credited with 65% diversion. A list of Registered Facilities can be found at sfenvironment.org/c&d

Column 5– Sorted, Non-Recyclable, Non-Compostable Debris hauled to landfill; **MUST DESCRIBE**.

Column 6 – Name of facility(s) you intend to use for reuse, recycling or disposal of each material generated from the project.

Submittal Instructions: Submit this completed and signed form to: Department of the Environment, 1455 Market Street, #1200., San Francisco, CA 94103. Attention: C&D Demolition Debris Recovery Plan. Fax: 415.554.6393

For questions, please call SFE at (415) 355-3700 or see www.sfenvironment.org/c&d

Diversion Rate Table (See Instructions on the front side of this form for column descriptions).

Material Type (**Tons**)	1 Total Tons Generated	2 Salvage or Reuse	3 Recycling (source-separated material)	4 Mixed C&D Debris to Registered Facility *	5 Landfill Disposal	6 Facility or Destination
Example: Wood	***50***	***5***		***45***		**Building Resources/SFR&D**
Wood, Pallets & Lumber (clean & unpainted, no pressure-treated wood)						
Cabinets, Fixtures, Doors, Windows, Equipment						
Metal						
Carpet						
Carpet Padding						
Cardboard						
Ceiling Tile						
Drywall (used and painted)						
Green Waste						
Concrete						
Asphalt						
Brick, Masonry, Tile						
Rock/Dirt/Soil						
MIXED DEBRIS						
Other (please specify)						
Sorted, Non-Recyclable, Non-Compostable Debris (please describe)						
TOTALS	A	B	C	D *		

Calculate **Your Diversion Rate** using the following formula:

B	+	C	+	D X .65 (DR)*	=		Divide by	A	=		X 100 =	**Your Diversion Rate**	%

[* Mixed C&D material designated for processing at a SF-Registered Mixed Debris Facility will be considered diverted at 65% diversion rate (pursuant to Ordinance No. 27-06).]

If **Your Diversion Rate** is less that 65%, provide justification why the project cannot meet the 65% diversion requirement

_____

List haulers removing material off site *(use extra page if necessary)*. *Use only Registered Transporters for Mixed Debris.*

1)_____ 2)_____3)_____

I AGREE TO SUBMIT A FINAL REPORT for this Demolition Permit WITHIN 30 DAYS AFTER COMPLETION OF THE DEMOLITION PROJECT; FINAL REPORT MUST VERIFY THE ACTUAL DIVERSION ACHIEVED & **INCLUDE ALL RECEIPTS FROM FACILITIES.** ***ESTIMATED DATE OF COMPLETION*:** _____

Submitted by (signature):_____**Date**_____

Print Name_____ **Title**_____

FOR OFFICIAL CITY USE ONLY

DATE PLAN/REPORT RECEIVED BY SFE _____

APPROVED _____ NOT APPROVED _____ DATE _____

COMMENTS _____

_____

APPROVED BY _____ NAME & TITLE_____

CONSTRUCTION AND DEMOLITION DEBRIS MANAGEMENT FORM

Permit #: ☐☐ – ☐☐☐☐☐☐ **Site Address:** _____

Responsibilities of general contractor or property owner	**Project Value* < $50,000**	**Project Value* = or > $50,000**
Complete and return this form within one week of permit application.	Optional	Required
Provide a trash receptacle on the job site for disposal of food waste (e.g., lunch waste) to prevent contamination of recyclables.	Required	Required
Clearly label all recycling containers on the job site regarding acceptable materials.	Required	Required

*Including both demolition and construction phases.

STEP 1 – Identify all debris generated and how it will be handled

OPTIONS ▶	**SALVAGED** Reused, donated, or sold	**SEPARATED** Placed in a material-specific container for recycling	**MIXED** Mixed with other recyclables
Cost Savings to Project (related to processing facility costs)			
Amount Diverted from Landfill			
Check MATERIALS generated and **check** an **OPTION** for how each will be handled	▼	▼	▼
☐ Metal	☐	☐	☐
☐ Cardboard (packaging)	☐	☐	☐
☐ Wood	☐	☐	☐
☐ Land-clearing debris	☐	☐	☐
☐ Rubble (asphalt, brick, concrete)	☐	☐	☐
☐ Drywall (new scrap)	☐	☐	☐
☐ Roofing (composition shingles, felt)	☐	☐	☐
☐ Plastics (includes vinyl products)	☐	☐	☐
☐ Carpet	☐	☐	☐
☐ Carpet pad	☐	☐	☐
☐ Ceiling panels (new or used)	☐	☐	☐
☐ Glass	☐	☐	☐
☐ Insulation	☐	☐	☐

STEP 2 – Read, accept and sign (retain a copy for your records)

In an effort to achieve waste prevention and recycling goals, I understand I am required to recycle construction waste in accordance with City Code 17.102.270 and associated Administrative Rules. I will comply with all regional and state rules and regulations pertaining to solid waste management including Metro Code Chapters 5.01 and 5.05. I understand that failure to comply with these requirements is considered an infraction and subject to an assessment (up to $500 for first violation – City Code 17.102.090).
I will convey this information to all contractors and subcontractors on this project. ☐ **I ACCEPT**

Print Name of Responsible Party

☐ General Contractor or ☐ Property Owner _____ Phone _____

Signature of Responsible Party _____ Date _____

STEP 3 – Return form within one (1) week of permit application

ELECTRONIC: Complete and submit form at www.recyclingnutsandbolts.com

FAX: 503-823-4562

MAIL: Bureau of Planning and Sustainability, 1900 SW 4th Avenue, Suite 7100, Portland, Oregon 97201

IN PERSON: Permit Center at 1900 SW 4th Avenue, 1st Floor

Waste Management Form - Part I

Construction & Demolition (C&D) Debris Deposit Program

Required for projects described in Municipal Code §66.0601-66.0610.

Deposit will be fully refunded if at least 50%* of ALL debris generated from the project is recycled. If the minimum required recycling rate is not met, the deposit refund will be prorated. **Deposit refund requests must be accompanied by weigh tickets for ALL debris generated, including all trash, salvage, reuse and recycling, and be submitted within 180 days from final inspection.** Refer to **Information Bulletin 119** for details on acceptable documentation.

Complete Part I before obtaining a building, combination or demolition permit.
Submit this form and your deposit to the Development Services Department staff at permit issuance.

Refundable Party Contact Information:

Name _____ Title _____ Company _____

Address _____ City _____ State ____ Zip _____

Phone _____ Email _____

Project Information:

Approval/Permit No. _____ Project Title _____

Project Address _____ Zip _____

Project Type: ❑ *New Construction* ❑ *Addition/Alteration* ❑ *Demolition*

Building Type: ❑ *Commercial* ❑ *Residential*

Estimated Square Feet _____

Estimated Start Date _____/_____/_____

Estimated Completion Date _____/_____/_____

TO BE FILLED OUT BY DSD STAFF
"C&D Deposit" Paid $_____
Invoice # _____ Date Paid _____

Fill out the table with *estimated* quantities in tons for each material that will be generated by your project. Note: A + B = C
Please use the ***City Construction and Demolition Debris Conversion Table*** if converting from volume to tonnage.

Material Type	A Estimated Salvage, Reuse or Recycle	B Estimated Disposal (Trash)	C Estimated Total Debris Quantity	Hauler	Certified Recycling Facility or Disposal Destination
Asphalt & Concrete					
Brick / Masonry / Tile					
Cabinets, Doors, Fixtures, Windows (circle all that apply)					
Cardboard					
Carpet, Padding / Foam					
Ceiling Tile (acoustic)					
Dirt					
Drywall					
Landscape Debris					
Mixed C&D Debris					
Mixed Inerts					
Roofing Materials					
Scrap Metal					
Stucco					
Unpainted Wood & Pallets					
Garbage / Trash					
Other:					
TOTAL					

To estimate Recycling Rate: (Total A/Total C) x 100 = Recycling %
MINIMUM RECYCLING RATE FOR ALL DEBRIS FROM YOUR PROJECT IS CURRENTLY 50%*
** Recycling rate is subject to change; check **Information Bulletin 119** for current rate.*

C&D debris may contain paint, asbestos, mercury switches, light bulbs, ballasts or other hazardous wastes that require removal prior to disposal. The Miramar Landfill cannot accept hazardous waste. For information on waste acceptance at the Miramar Landfill, call (858) 694-7000.

Waste Management Form - Part II

Construction & Demolition (C&D) Debris Deposit Program

Required for projects described in Municipal Code §66.0601-66.0610.

Complete Part II after final inspection.
Submit with ALL trash, salvage, reuse and recycling weigh tickets.
Please refer to **Information Bulletin 119** for details on acceptable documentation.

Send this completed form and all documentation:

By Mail
City of San Diego
Environmental Services Department
Attn: C&D Diversion Coordinator
9601 Ridgehaven Court, Suite 320
San Diego, CA 92123-1636

By Fax
Attn: C&D Diversion Coordinator
(858) 492-5089

By Email
ESD_CD@sandiego.gov

Applicants must submit refund requests within 180 days from project final inspection. Requests submitted after 180 days will not be eligible for a refund. Refunds will not be issued if all requested information and documentation is not provided. Refunds will be mailed within 45 business days following receipt of all proper forms and documentations. If the minimum required recycling rate specified in Information Bulletin 119 is not met, the deposit refund will be prorated.

Project Information

Approval/Permit No. _____ Project No. _____ Project Title _____

Final Inspection Date _____/_____/_____ Project Address _____

Affirmation

Applicant is advised of San Diego Municipal Code section 11.0401(b) which states: "No person willfully shall make a false statement or fail to report any material fact in any application for City license, permit, certificate, employment or other City action under the provisions of the San Diego Municipal Code."

I certify under penalty of perjury under the laws of the State of California that the information provided in and with this form pertains to construction and demolition debris generated only from the project listed in Part I, that I have reviewed the accuracy of the information, and that the information is true and correct to the best of my knowledge and belief.

Name _____ Title _____ Company _____

Signature _____ Date _____

Payment Information

Check will be made payable to the Refundable Party identified on the Development Services Department's paid invoice on which the "C&D Deposit" was assessed. Please provide complete mailing address below.

If payment is to be made to a different party, the Refundable Party must sign in the box below, designate to whom the check will be payable, and provide complete mailing address.

By signing my name, I _____, _____, _____,
Refundable Party on invoice (print name) Company Signature

authorize the refund check to be made payable to: _____.

Refund Mailing Address _____ City _____ State ____ Zip+4 _____

For more information, please contact the City of San Diego Environmental Services Department:
(858) 694-7000 or visit www.recyclingworks.com

NEW Construction & Demolition (C&D) Deposit Schedule

Effective January 1, 2014

New Deposit Schedule - Effective January 1, 2014				
Deposit Types	Deposit/ Sq Ft	Minimum Sq Ft Subject to Ordinance	Maximum Sq Ft Subject to Deposit	Range of Deposits
Residential New Construction, Non-residential Alterations, Demolition	$0.40	1,000	100,000	$400 - $40,000
Non-residential New Construction	$0.20	1,000	50,000	$200 - $10,000
Flat Rate				
Residential Alterations*	$1,000	1,000	6,999	$1,000

* Residential Alterations 7,000 square feet and greater in size, and hotels are considered Non-Residential Alterations.

DEPOSIT AMOUNTS

Deposit amounts are applied to the entire area(s) where the work will be performed, and are calculated based on the square footage. Deposits are applied to each qualifying permit. Phased projects with multiple permits/approvals are subject to multiple deposits. Deposit type for mixed use buildings will be determined according to the largest use square footage, which will be applied to the entire square footage of the project. Deposits must be paid at the time of permit issuance and appear in the project invoice as "C&D Deposits." In order to be eligible for a full refund of the deposit, at least 50% by weight of the total C&D debris generated by the project must be recycled.

EXEMPTIONS:

The following projects, alone or in combination with one another, are exempt from the requirements, except if the project(s) is/are undertaken in conjunction with a project which otherwise is subject to the requirements:

A. Roofing projects;
B. Installation, replacement or repair of: retaining wall; fence; shade structure, awning or canopy; carport, patio cover, balcony, trellis or fireplace; deck; skylights, windows, doors, stair flights or poles; siding, stucco or veneer; swimming pool or spa; pre-fabricated sign or antenna which does not require modification to the structure to which the sign is attached; storage racks; partitions only; seismic tie-downs;
C. Modification, alteration or repair of facades;
D. Re-pipe repairs;
E. Foundation repairs;
F. Installation or replacement of a pre-fabricated modular building or mobile home;
G. Projects which require only an electrical permit, only a plumbing permit or only a mechanical permit;
H. Projects which do not require plans for a Building Permit;
I. Projects which are expected to generate only hazardous waste and/or hazardous substances; and
J. Projects for which the C&D debris deposit is less than $200.

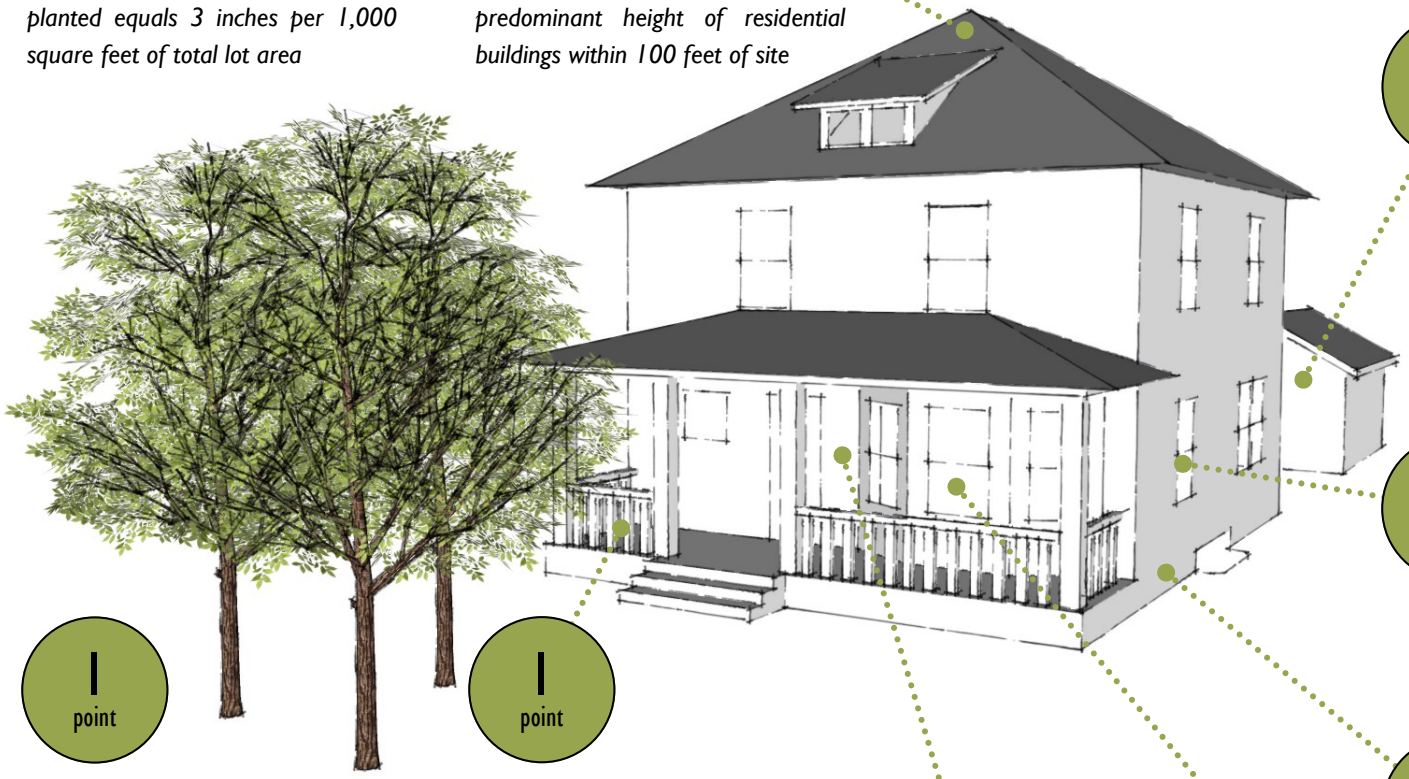
SITE PLAN REVIEW

RESIDENTIAL POINT SYSTEM

1 - 4 UNITS

AT LEAST 17 TOTAL POINTS REQUIRED

Designs must also comply with all other applicable standards in the Zoning Code



4 points

Trees

Total diameter of trees retained or planted equals 3 inches per 1,000 square feet of total lot area

4 points

Building Height

Height is within one-half story of the predominant height of residential buildings within 100 feet of site

3 points

Detached Garage

At least 1 off-street parking space per dwelling unit is provided in a detached structure located entirely in the rear 40 feet or 20% of the lot (whichever is greater) and is at least 20 feet from any habitable portion of the principal structure

2 points

Rear/Interior Side Windows

At least 10% of the walls on each floor facing a rear or interior side lot line are windows (does not include half stories)

1 point

Stormwater Quality Credit

Qualifies for and provides proof of receipt of a City of Minneapolis Stormwater Quality Credit

1 point

Front Porch

The structure includes a 70 square foot open and covered front porch which is not enclosed with windows, screens, or walls - provided at least one existing porch exists within 100 feet of the site, guardrails are no more than 3 feet high and 50% opaque, the porch matches the finish and trim of the dwelling, and is not raw or untreated lumber

6 points

Exterior Building Materials

Exterior building materials are masonry, brick, stone, stucco, wood, cement-based siding, and/or glass

3 points

Basement

The structure includes a basement as defined by building code

3 points

Street-Facing Windows

At least 20% of the walls on each floor facing a public street are windows (does not include half stories)

Minneapolis
City of Lakes

See Section 530.280 of the Zoning Code for more information

EFFECTIVE 10-1-2014

CONSTRUCTION WASTE and RECYCLING REPORT

RECYCLE MORE. LANDFILL LESS.™

atomic RECYCLING

Construction Waste & Recycling Manager: Atomic Recycling **Telephone: 612-623-8888**

Project: Sample Project **Contact: Sales Rep**

Location: Sample Location

Responsible Party: Sample Responsible Party

Distribution List	

Current Period: May 1, 2008 - May 31, 2008 **Load Quantity:** 31 **Current Period Construction Waste Tons:** 123.68

On-Site Source Separation by Material Type	Tons		% of Total Tons	Final Destination(s)
Fiber: Cardboard and Paper	0.00		0.00%	
Aggregate: Asphalt, Concrete and Masonry	11.14		9.01%	BRR - Rock
Metals: Iron, Copper, Aluminum and Brass	24.05		19.45%	Gerdau Ameristeel & Re-Alliance & SCI
Mixed Wood	32.86		26.57%	General Biofuel Inc & Midwest Agrifuels LLC
Carpet	0.00		0.00%	
Ceiling Tiles	0.00		0.00%	
Total On-Site Source Separation	68.05		55.02%	

Off-Site Source Separation by Material Type	Tons	*BRR Recycle Rates	% of Total Tons	Final Destination(s)
Fiber: Cardboard and Paper	0.51	0.92%	0.42%	Pioneer Paper Stock Company
Aggregate: Asphalt, Concrete and Masonry	11.40	20.49%	9.22%	CS McCrossan Inc
Metals: Iron, Copper, Aluminum and Brass	3.03	5.45%	2.45%	Gerdau Ameristeel & Re-Alliance & SCI
Mixed Wood	7.62	13.69%	6.16%	General Biofuel Inc & Midwest Agrifuels LLC
Alternative Daily Cover	15.70	28.22%	12.69%	Veolia ES Rolling Hills Landfill
Shingles	2.06	3.70%	1.67%	Dem-Con Companies LLC
Sub-Total Off-Site Source Separation - Recycled	40.32		32.60%	
Direct Landfill - Construction Waste	15.31		12.38%	W/M - Elk River
Total Off-Site Source Separation	55.63			
Total Waste Removed from Site This Period	123.68		100.00%	
Total Waste Landfilled This Period	15.31		12.38%	
TOTAL RECYCLED THIS PERIOD	**108.37**		**87.62%**	

Project To Date Summary: October 1, 2007 - May 31, 2008 **Load Quantity:** 113 **Project To Date Construction Waste Tons:** 589.06

On-Site Source Separation by Material Type	Tons		% of Total Tons	Final Destination(s)
Fiber: Cardboard and Paper	0.00		0.00%	
Aggregate: Asphalt, Concrete and Masonry	285.54		48.47%	BRR - Rock & Bury Carlson & Minneapolis Concrete Recyclers LLC
Metals: Iron, Copper, Aluminum and Brass	39.90		6.77%	Behr Mason City LLC & Gerdau Ameristeel & Kirschbaum Krupp & Re-Alliance & SCI & Shine Bros.
Mixed Wood	103.90		17.64%	General Biofuel Inc & Midwest Agrifuels LLC & Transfer N Transport LLC
Carpet	0.00		0.00%	
Ceiling Tiles	0.00		0.00%	
Total On-Site Source Separation	429.34		72.89%	

Off-Site Source Separation by Material Type	Tons	*BRR Recycle Rates	% of Total Tons	Final Destination(s)
Fiber: Cardboard and Paper	1.84	1.15%	0.31%	Pioneer Paper Stock Company
Aggregate: Asphalt, Concrete and Masonry	29.12	18.23%	4.94%	Barton Sand & Gravel & CS McCrossan Inc
Metals: Iron, Copper, Aluminum and Brass	10.02	6.27%	1.70%	Behr Mason City LLC & Gerdau Ameristeel & Kirschbaum Krupp & Re-Alliance & SCI & Shine Bros.
Mixed Wood	21.41	13.41%	3.64%	General Biofuel Inc & Midwest Agrifuels LLC & Transfer N Transport LLC
Alternative Daily Cover	44.26	27.71%	7.51%	Veolia ES Rolling Hills Landfill
Shingles	2.06	1.29%	0.35%	Dem-Con Companies LLC
Sub-Total Off-Site Source - Recycled	108.71		18.46%	
Direct Landfill - Construction Waste	51.01		8.66%	W/M - Elk River
Total Off-Site Source Separation	159.72			
Total Waste Removed from SIte Project To Date	589.06		100.00%	
Total Waste Landfilled Project To Date	51.01		8.66%	
TOTAL RECYCLED PROJECT TO DATE	**538.05**		**91.34%**	

***BRR is Broadway Resource Recovery LLC, the approved off-site recycling facility.**