Fremont County

Best Practices Analysis – Green Economy

Fall 2012

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Executive Summary

The four counties of Southeastern Idaho and Wyoming received a sustainability grant from the US Federal government. A portion of the grant was used to conduct a best practices analysis of a green economy. The areas of the green economy that were researched include; Renewable Energy, Waste Management, Alternative Transportation, Water Management, and Land Management.

Research was conducted on two communities, two cities, and two international countries to analyze and determine best practices. Renewable Energy, Waste Management, and Alternative Transportation, in their respective order, were areas of the green economy that were focused on the most throughout the research.

Results have shown that improving community awareness of a green economy has been a vital start to developing a sustainable initiative. In Golden, Colorado and Moscow, Idaho the base of their foundation of a sustainable initiative has been in community awareness, cooperation, and local partnerships. Results have also indicated that on a community level job creation of a green economy is minimal. On a larger scale of Seattle, Washington and Portland, Oregon there is more job creation and opportunities to expand the green economy because of their overall resources.

For Renewable Energy, creating a home energy audit program and a solar program yields higher job creation opportunities. For Waste Management, rural drop off stations throughout a community or city and partnering with the local recycling plant yields higher job creation opportunities. For Alternative Transportation, methane conversion and public transit yields higher job creation opportunities. The limitations of the report are that it is a broad overview of many best practices implemented by the communities, cities, and international countries as opposed to researching a couple best practices. Finally, overall research indicates that job creation potential is at its highest when the green economy focus area is highly populated.

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Scope & Purpose

Fremont County was awarded a 1.5 million dollar sustainability grant from the United States Federal government. The grant is intended for use in developing the four counties of Madison, Fremont, Teton (ID), and Teton (WY). The Eastern Idaho Entrepreneurial Center (E Center) was commissioned to conduct a best practices analysis concerning the development of a sustainable and competitive green economy. Areas of the green economy focused on:

- Renewable Energy
- Waste Management
- Alternative Transportation
- Water Management
- Land Management

The analysis is intended to provide best practices at the level of a community, city and international country for each area of the green economy. After review and comparison, best practices recommendations are given to be incorporated into the four counties.

METHODOLOGY

Primary sources for the best practices analysis were gathered from official websites of the community, city, and international governments. Informational interviews were also conducted with community administrators. Communities that were researched were Golden, Colorado and Moscow, Idaho. Communities were chosen because of close similarities in population, region, and local universities. Cities that were researched were Seattle, Washington and Portland, Oregon. These cities were chosen because of close proximity, and consistency in being ranked high on green cities lists. International countries that were researched were Switzerland and Germany. International countries were chosen from mentor recommendations and being on top green countries lists. Private company websites were used in order to go more in depth for job creation and further investigation. These sources allowed the team to gain information which was both reliable and complete in nature. Research was analyzed and placed into a best practices table (see appendix pg. 67) in order to gain a broader view of the green economy. Areas of the green economy were prioritized with Renewable Energy being first, Waste Management second, Alternative Transportation third, Water Management fourth, and Land Management fifth. Information was sparse for Land Management and its practices. Some information was found for Land Management in the community of Moscow, Idaho, and in Portland, Oregon. Recommendations were drawn from the research provided.

Best Practices

Renewable Energy

Renewable energy deals with ways an entity might increase its reliance on renewable energy sources and also becoming more energy efficient. This section of renewable energy follows the outline of the research; that is, it will move through topics within the section in the same order as the information was researched. A complete table containing all projects may be found in the appendix at the end of this report. This section, however, will relate to projects deemed most applicable from each of the locations beginning with comparable communities, then comparable cities, and lastly international countries.

Golden, Colorado

The City of Golden Colorado is similar to that of Rexburg Idaho. Golden's population in 2010 was 18,867[1]. The other similarities are that there is also The Colorado School of Mines in the city and there is a National Laboratory in its proximity as well. To determine how Golden Colorado started their sustainability program, and to help the four counties find out how a green economy could come to fruition in Eastern Idaho, an informational interview with Theresa Worsham, Sustainability Manager, of Golden Colorado was conducted. The following quote explains how Golden, Colorado began its green initiatives[2].

> "The sustainability initiative for Golden Colorado began in 2006. It started with the residents of the community wanting to learn about how to save money in their homes and becoming more efficient. The city decided to hold an open house for the residents of Golden to help create awareness. To advertise the event the city sent out flyers, published emails, and sent out monthly newsletters. The City Council hired a facilitator to conduct the open house, control the crowd, and so that there wouldn't be any bias. The meeting consisted of a small presentation and a Q&A session. From the open house seven focus groups were created that consisted of five to thirteen members of the community. The focus groups convened for four months to decide on and create a plan for Golden (Resolution 1793)[3]. After creating the resolution the city hired a local company, Natural Capitalism Solutions, to assess the community and help them create a sustainability plan. The

[1] (Golden Colorado, 2010)
[2] (Worsham, 2012)
[3] (Resolution No. 1793, 2007)

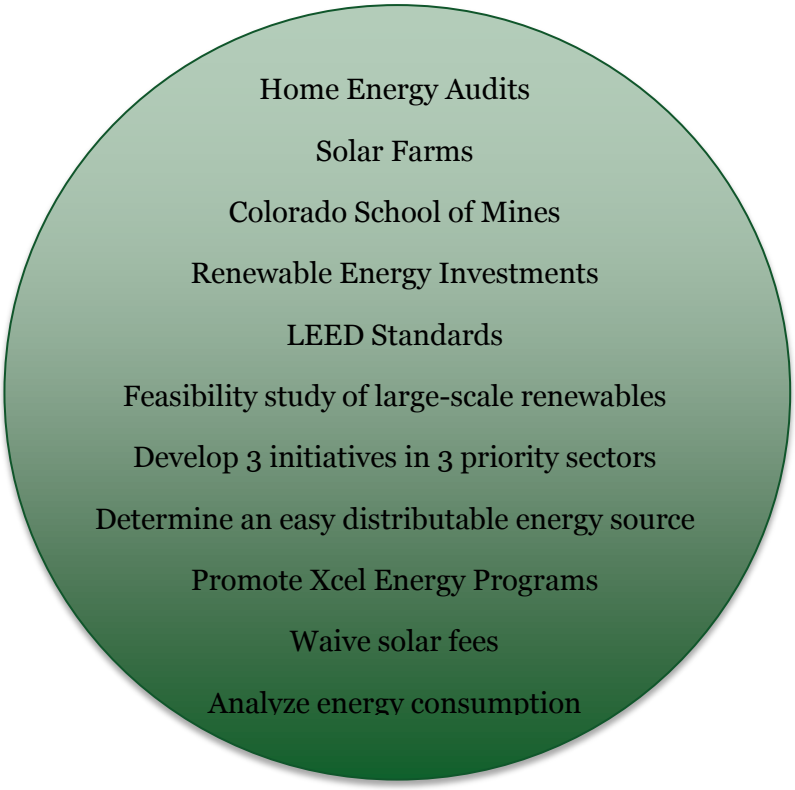
funding of the sustainability plan was created from the General Fund of Golden Colorado of $60,000."

In the sustainability plan, the city lays out its goals and strategies of what it would like to accomplish over the next few years. The following sections highlight specific goals and strategies that Golden has implemented. It includes home energy audits, solar farm strategy, and The Colorado School of Mines.

Goal #1: Reduce community energy usage by 20% and increase the energy being derived from renewables by 20%[4].

Home Energy Audits Strategy – To perform home energy audits Golden used the local utility company, Xcel Energy, and its energy efficiency rebate programs. A home energy audit qualifies under this rebate program offered by the local utility company. A home audit includes a whole house inspection from top to bottom. The home energy audit is designed to help the consumer improve the energy efficiency of the home[5]. An example of what a home auditor would do is a blower door diagnostics test[6]. The blower door diagnostics test helps determine how much air leakage is in the home. An infrared camera is used in conjunction with the test to see air flow movement of hot and cold air coming into and out of the house. After determining the weak points of the building, the resident can then fix the problem areas of the home and have the audit completed again to compare a before and after energy efficiency report.

Best Practices Community – Golden, Colorado



[4] (City of Golden Sustainability Strategic Plan, 2010)
[5] (Jana, 2012)
[6] (Energy Audits)

A home auditor must be certified by the Building Performance Institute (BPI), as required by the Department of Energy, before performing an energy audit[7]. The base certification required to perform a home audit is the Business Analyst certification[8]. A home audit will generally cost $350 depending on the size of the home. Xcel Energy has created a rebate program where $200 will be paid for by the utility company[9] and the home audit will take roughly four hours to complete. To add an incentive for the residents of Golden the city offered an additional $60 rebate for completing a home energy audit. The additional incentive that the city offered sold out in three days. After getting the home audit completed Golden saw that the residents usually wouldn't do anything with the advice they received. Most people wouldn't even change insulation or switch out light bulbs. To help cope with this the city created an energy advisory program[10]. The program helps the residents after they have received the audit on their home, and helps them connect with contractors to achieve their energy efficiency goals. In addition to connecting the residents with contractors the program will help connect them with banks to get a home efficiency loan so that they can afford to make their home more efficient. The home efficiency loan is like a home equity loan. Potential job creation success comes from hiring home energy auditors and in training for the BPI Business Analyst certification.

Goal #2: Reduce city energy usage by 25% and increase the energy being derived from renewables by 50%[11].

Solar Farms Strategy – An energy mandate from the state legislature of Colorado says that utility companies must have 30% of their energy come from renewables. To go along with this energy mandate Golden Colorado has made information available to its residents on their website referring them to Xcel Energy, the local utility company. The residents of Golden may participate in purchasing renewable energy from the surrounding solar farms[12]. The citizens pay a surcharge to receive clean energy from the solar farms. After this energy mandate was passed in the state of Colorado many more contractors and projects came into the state.

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[7] (Jana, 2012)
[8] (Individual Certification)
[9] (Jana, 2012)
[10] (Worsham, 2012)
[11] (City of Golden Sustainability Strategic Plan, 2010)
[12] (Worsham, 2012)

Colorado School of Mines Strategy – The Colorado School of Mines, located in Golden, has created a relationship with the city. Before the beginning of each semester the city will send a list of projects to the school to consider undertaking. Some of the projects are chosen by the professors of the school. This gives an opportunity for the students of the school to gain experience by working on these projects for the city. Previous projects that have been conducted by the school's students for the benefit of the city have been a cost benefit analysis of changing the city street lights to more efficient LED lights. Another project the students conducted was in using wind turbines for local businesses. The students designed a wind system to help generate electricity. After designing the system the city gave three grants to businesses of the area to help them develop the system that the students had designed[13].

Moscow, Idaho

Moscow Idaho is similar to Rexburg Idaho. In 2010 the population of the city was 23,800[14]. There are a few colleges and universities in the area, the most well-known being The University of Idaho.

When discussing the sustainability initiative with Alexander she recited the following goals of the city and what Moscow has done to start those goals. The following section highlights a specific goal and strategy that Moscow has implemented. It includes home energy audits.

Goal #1: Help meet the increased demand of energy but also keeping it sustainable[15].

Home Audit Strategy – Moscow, similar to Golden Colorado, created a home energy audit plan for its residents. The home auditors specifically targeted homes that were built in 2003, 2006, and 2009. These homes were built with energy conservation in mind. Home auditors would inspect the houses built during those years and check the efficiency of the buildings to see how the homes performed. The standards of the inspection were that of conserving energy and creating energy efficiency. Auditor's revealed homes that were built to code in 2003, 2006, and 2009 had air leakage issues. The inspections discovered that 80-90% of the air leakage came from the furnace. After the inspection had taken place, contractors were hired to seal the furnace area and stop the leakage. The process

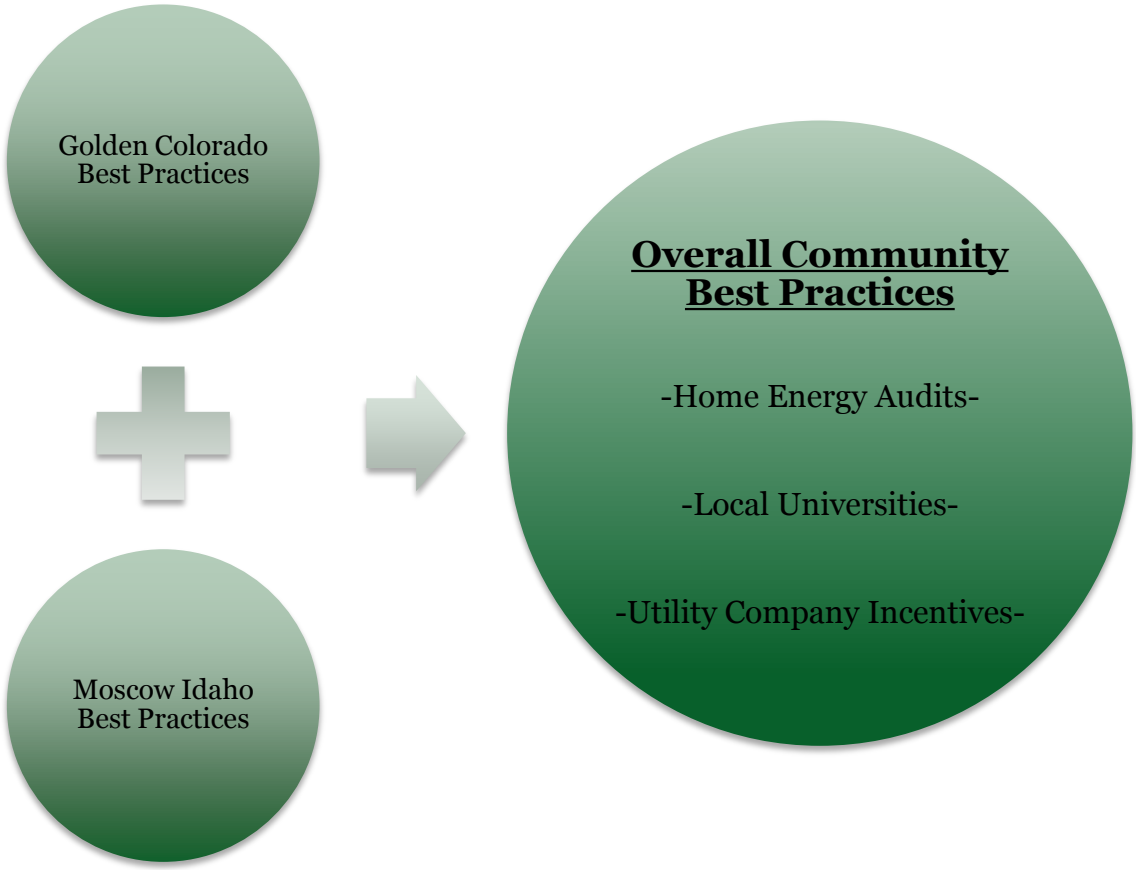
[13] (Worsham, 2012)
[14] (Moscow Idaho, 2010)
[15] (Alexander, 2012)

would usually take a few hours. The inspections on these homes encouraged contractors to start doing duct blast testing. Duct blast testing helps find leaks in the air ducts of a building. By doing this process before a home was completely finished, it resulted in fewer call backs from the HVAC contractors. When building codes change the city provides a classroom situation to the local contractors to inform them of changes[16].

Best Practices Community – Moscow, Idaho

[16] (Alexander, 2012)

Common practices of Golden, Colorado and Moscow, Idaho are home energy audits, local universities and utility company incentives.



Seattle, Washington

Seattle Washington is close in proximity to the four counties of Eastern Idaho and Wyoming. The population of Seattle in 2010 was 608,660[17]. According to Mother Nature Network[18], Scientific American[19], and The Huffington Post[20], Seattle is in the top ten greenest US cities. The Sustainability and Environment Department of the city of Seattle have been working on Seattle's green initiative for over 10 years. The department has worked with other divisions of the government and its citizens to help create a sustainable Seattle[21]. The following sections highlight specific goals and strategies that Seattle has implemented. It includes Seattle's Green Up program, and the Community Power Works program.

Goal #1: Enroll customers to purchase a percentage of their power from renewable sources and reduce the reliance on fossil fuels[22].

Green Up Strategy – The Green Up program creates awareness for the residents of Seattle by letting them know that there are options in purchasing electricity. The Green Up Program helps reduce the reliance on fossil fuels which overall reduces climate-warming emissions. The program gives the residents of Seattle an opportunity to pay a premium to purchase electricity that comes from renewables. The customer is able to purchase Renewable Energy Credits (REC's)[23], green power, which is sold separately from commodity power. There are different levels that a customer may sign up for. The table[24] below, taken from the Green Up Program's website, gives the level which the customer may select to have their power be derived from renewables. The major

Table 1: Green Up renewable purchasing

Green Power Purchasing	
Participation Level	**Cost Per Month**
25%	$3
50%	$6
100%	$12

[17] (Seattle Washington)
[18] (Top Ten Green US Cities)
[19] (Bushwick, 2011)
[20] (Green US Cities, 2011)
[21] (Office of Sustainability and Environment)
[22] (Green Up)
[23] (Renewable Energy Credits)
[24] (Green Up for Residential Customers)

sources of renewable energy come from locations in the state of Washington and from neighboring states. The table[25] below shows where the Green Up's energy is being derived from.

Table 2: Green Up power content

Green-e Energy® Certified New Renewable Resources in Green Up[2]		Generation Location
Biogas	14%	Washington & Idaho
Geothermal	73%	Idaho
Small Hydro	3%	Idaho
Wind	10%	Oregon
TOTAL	100%	Washington, Oregon & Idaho

The Green Up Program in Seattle is a Green-e Energy certified program. The certification indicates that the program meets the guidelines and consumer protection standards which were created by the non-profit Center for Resource Solutions[26].

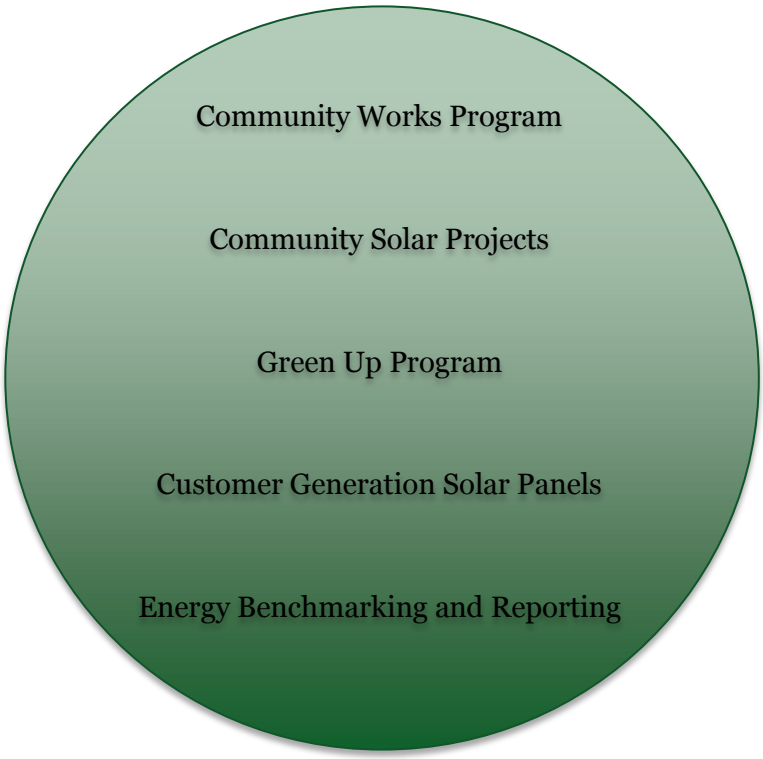
Goal #2: Create a pilot program to enhance energy efficiency at the residential, commercial and institutional level[27].

Community Power Works Strategy – Community Power works is a website where residents of Seattle can sign up for energy assessments of their homes, energy upgrades, rebates, financing, and pre-approved contractors[28]. The program is designed so that residential or commercial consumers may first sign up for an energy assessment of their home or building. The assessment takes two to four hours to complete with the auditor inspecting the building. The inspector will use infrared cameras to detect air flow movement, check insulation gaps in walls, and check gaps in floors and ceilings. The assessment costs $400 but with the rebates that Seattle City Light offers, the local utility company, the cost to consumer is $95[29]. After the auditor has completed the inspection of the home the resident is helped in finding a pre-approved contractor to complete the recommendations from the home assessment. If the resident is not able to afford

[25] (Power Content)
[26] (Power Content)
[27] (Community Power Works)
[28] (Community Power Works)
[29] (Community Works: Home Energy Assessment)

the upgrades of the home, they are helped in financing the project. The residents are connected with a local non-profit community lender, Craft3, or a local credit union, Puget Sound Cooperative Credit Union, in order to obtain a loan for the improvements on the home. The loan has a fixed rate of 4.49% APR and the amount will range from $1,500 to $30,000 for up to 20 years. Residents with a credit score as low as 590 can be approved, and the repayment of the loan is done through the electricity bill that the residents receive from Seattle City Light[30]. After obtaining financing for the project, the resident may pick a contractor from a pre-approved list on the Community Works website. In order for a contractor to install the energy upgrades for the resident and complete the recommendations set by the inspection they must be certified first through the BPI, North American Technician Excellence (NATE), or the Laborers' International Union (LiUNA)[31]. The Community Works Program has been successful in creating jobs for the citizens of Seattle. So far the program has created over 109,200 hours of work performed by 782 people, including 606 contractors and energy auditors[32].

Best Practices City – Seattle, Washington



[30] (Home Energy Upgrade With No Money Down)
[31] (Approved Contractor Application)
[32] (Impact)

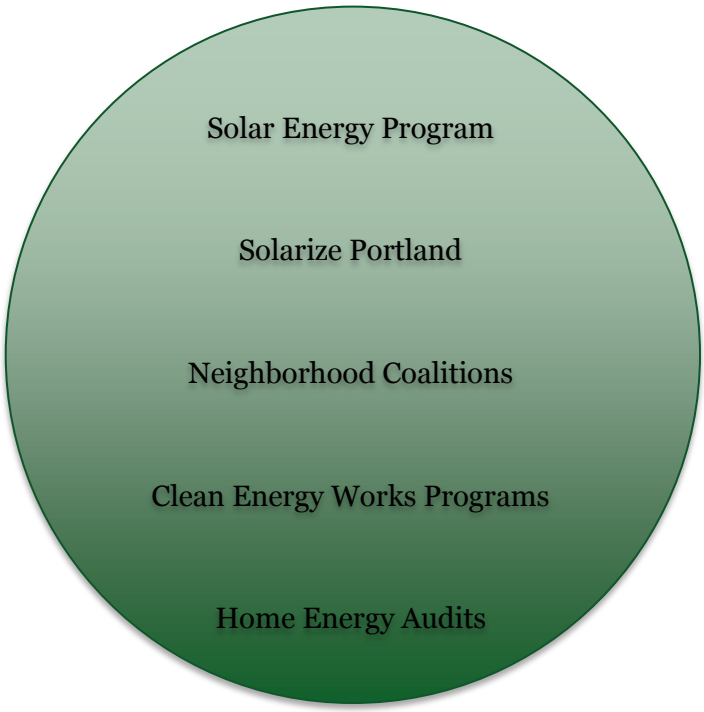
PORTLAND

Portland Oregon is in close approximation to the four counties of Eastern Idaho and Wyoming. The population of Portland Oregon in 2010 was 583,776[33]. According to Mother Nature Network[34], Scientific American[35], and The Huffington Post[36], Portland is in the top ten greenest cities in the US. The Planning and Sustainability Department of Portland is the driver of the city's sustainability initiatives. The government has worked with its residents to create a greener Portland. The following sections highlight specific goals and strategies that Portland has implemented. It includes the Solarize Portland program and the Clean Energy Works program.

Goal #1: Bulk volume purchasing of solar panels for a community[37].

Solarize Portland Strategy – The program first began with the banding together of neighborhood coalitions. The Mount Tabor Association was a leader in organizing the initiative for first implementing a bulk solar panel purchasing project. The program helps neighbors in deciding who to hire, how much to budget, and where to begin[38]. Neighbors will band together and then decide on which solar panels to purchase and which contractor to install solar panels on their homes. By having multiple neighbors, the communities are able to save in costs by buying in bulk. The neighborhoods conduct their own marketing and sales campaign when deciding to do this and when coalitions decide to implement the program they can save between

Best Practices City – Portland, Oregon



[33] (Portland Oregon, 2010)
[34] (Top Ten Green US Cities)
[35] (Bushwick, 2011)
[36] (Green US Cities, 2011)
[37] (Solarize Portland, 2009)
[38] (Solarize Portland, 2009)

15%-20% on the purchase of solar panels. This savings coupled with the tax credits provided by the state of Oregon for installing solar panels can bring the costs down by 90%[39]. A typical cost of a Solarize Portland project is depicted in the table below[40]. The city of Portland has created a guidebook for the Solarize Portland project. The guidebook gives information on how other neighborhoods can begin an initiative such as the one Portland has created. For customers that can't afford the out of pocket costs of a Solarize project there is financing available. A program called GreenStreet Lending[41] offered through Umpqua Bank, which gives residents the option to obtain a loan for the solar panel project. The project also requires solar contractors to install the solar panels once the neighborhoods have decided upon a contractor. The requirements for the solar contractors are that they must have a Limited Energy Technician, Class A license[42] and it's recommended to be certified through the North American Board of Certified Energy Practioners (NABCEP). The contractor must first pass the Entry Level PV Certification; then can go on and get a PV Installer Certification. The NABCEP certifications are volunteer certifications that the installer may obtain. The purpose of the certifications is to inform residents that the contractor has a gold standard[43]. The Solarize Portland project has created 18 fulltime permanent jobs for the area of Portland[44].

Table 3: Typical cost of a 2011 Solarize Portland project

3 kW PV System	Cost	Notes
Total System Cost Before Incentives	$18,000	$6.00/watt
Energy Trust of Oregon Cash Incentive	($5,250)	$1.75/watt
Out of Pocket	$12,750	
Federal Tax Credit – 30%	($3,825)	Calculated after Energy Trust Incentive
Oregon Residential Tax Credit	($6,000)	$2.10/DC watt; taken over 4 years
Final Cost After 4 Years	**$2,925**	

[39] (Solarize Portland, 2009)
[40] (The Solarize Guidebook, 2011)
[41] (GreenStreet Lending)
[42] (Electrician, Limited Energy Technician, Class A (LEA))
[43] (PV Installer Certification)
[44] (The Solarize Guidebook, 2011)

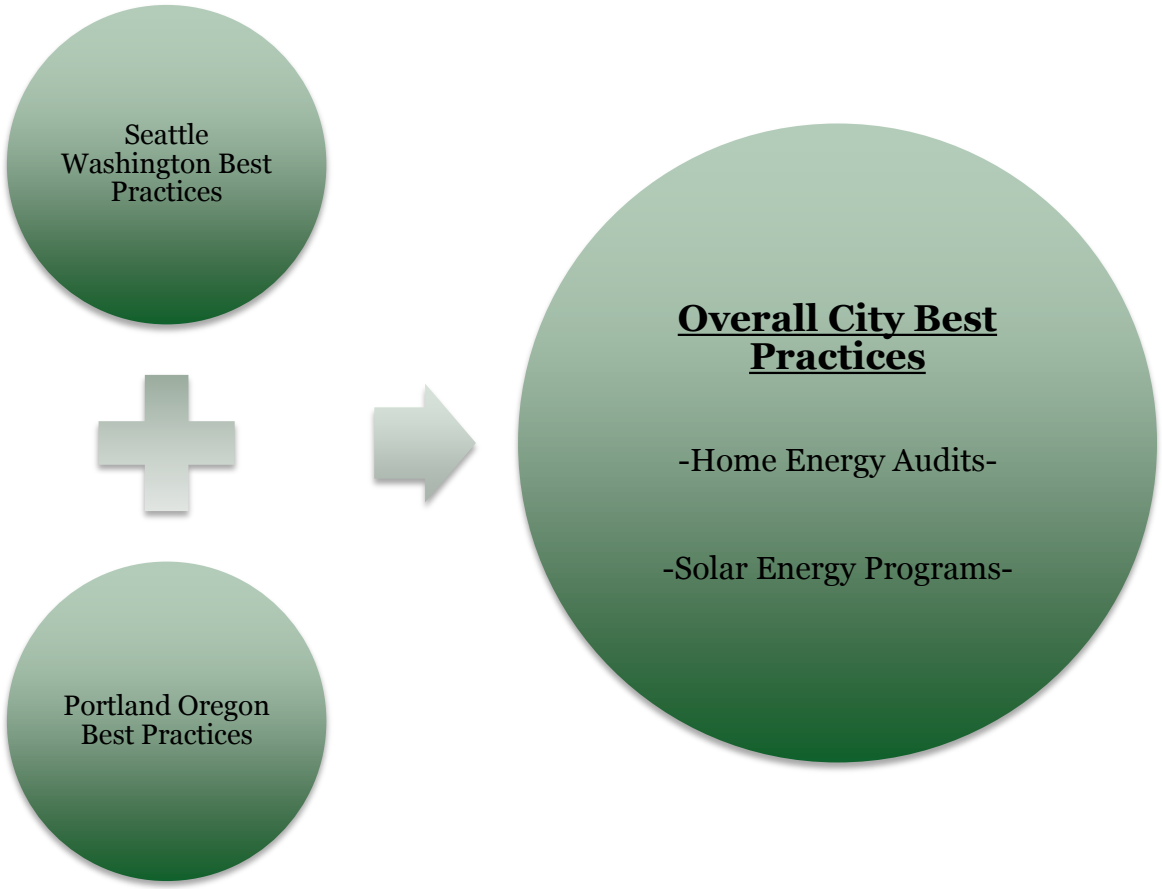
Goal #2: Home and building energy assessments for upgrading and improving energy efficiency[45].

Clean Energy Works Program Strategy – The Clean Energy Works Program started in March of 2011. The program began with Mayor Sam Adams and the intent of saving energy and creating jobs. Residents may go to the Clean Energy Works website and begin the application process. The program is an energy assessment of the home. A home auditor will inspect the home and pinpoint certain areas in the home or building that is not energy efficient. The assessment costs $500, but if the resident qualifies then the cost is waived. The inspection takes four hours to complete and includes a crawl through inspection of insulation, infrared camera to detect air flow movement and hot and cold spots, a blower door test for air leakage, a duct blaster test for air leakage, and a safety test of heating and cooling equipment[46]. The home auditor must be BPI certified before they can do an inspection of the home. After the assessment is completed on the home the resident receives a custom report of the home and where there can be improvements made. The resident is then connected with financing options to make the recommended improvements to the home. The Clean Energy Works Program has partners in counties throughout the Portland area to help in financing. Financing for the improvements of the home range from $2,000 - $30,000 with an average just over $10,000. The resident isn't required to put any money down and there are instant rebates ranging from $2,000 - $3,000 when using financing options[47]. After the financing has been completed the residents are then connected with qualified contractors in the area to install and upgrade the home to be more energy efficient. All of the contractors that work with the Clean Energy Works Program are BPI certified, as well as Home Performance with Energy Star Qualified, and are allies of the Energy Trust Trade[48]. Some of the upgrades or improvements that the contractors will install in homes are high performance attic and wall insulation, triple pane R5 windows, air duct sealing, and Hi-Tech water heating systems. The Clean Energy Works program has been very successful in creating jobs for the residents of Portland. There has been employment of over 400 workers including 48 new hires in the

[45] (Clean Energy Works Program, 2011)
[46] (Home Energy Assessment)
[47] (Rebates and Financing)
[48] (Contractors)

construction trades. The average wages of the workers is $20.34/hour with 80% of new hires coming from the local workforce[49].

Common practices of Seattle, Washington and Portland, Oregon are home energy audits and solar energy programs



[49] (Clean Energy Works Program, 2011)

SWITZERLAND

In the latest Environmental Performance Rankings report, which was released June 8, 2012 the country of Switzerland was ranked number one overall out of 132 countries[50]. The report is produced by Yale University and Columbia University. The report is based on 22 performance indicators and there are two main objectives when ranking a country. One of the objectives is environmental health and the other is ecosystem vitality[51].The following sections highlight a specific goal and strategy that Switzerland had begun to implement. It includes a 2,000 Watt Society.

Goal #1: Create a 2,000-Watt Society by reducing energy consumption by two thirds.

2,000 Watt Society Strategy – In the country of Switzerland the average person uses 6,000 watts of electricity per year. The main objective of the country is to reduce its energy consumption so that average person reduces consumption from 6,000 watts per year to 2,000 watts per year. In 1998 the Board of the Swiss Federal Institutes of Technology first promoted the idea of a 2,000 Watt Society. Over the next 40 years the Swiss are implementing the idea into the country. The pilot regions of Basel Stadt, Zurich, and Geneva have started a movement toward the goal[52]. One of the focal points of the City of Basel is construction. The canton has the initiative for creating energy efficient buildings. At a residential level and a commercial level energy rebates are offered from the local utility company, IWB, to incentivize the residents. The buildings must meet the requirements of

Best Practices International - Switzerland

[50] (Environmental Performance Index, 2012)
[51] (New Global Environmental Performance Rankings Released, 2012)
[52] (Partner Regions)

Minergie, a Swiss housing standard, which labels the structure as low energy consumption[53]. Job creation of the 2,000 Watt Society is unknown.

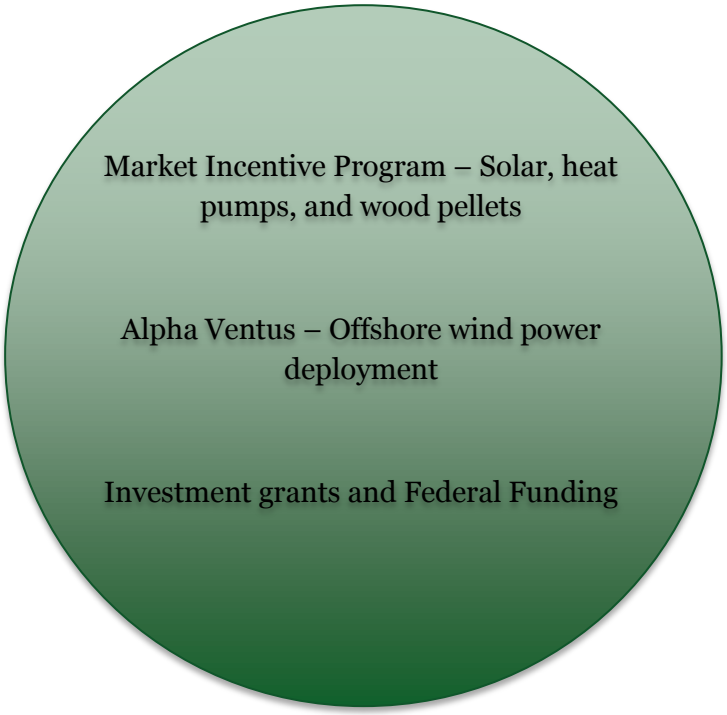
GERMANY

In the Environmental Performance Rankings report Germany was ranked eleventh overall[54]. The research team studied Germany to determine best practices of the nation in renewable energy. The following section highlights a specific goal and strategy that Germany had implemented. It includes a the Heat Act of 2009 passed by the federal government.

Goal #1: Market Incentive Heat Act – 14% of the heat supply used in buildings come from renewable energy sources by the year 2020[55].

Market Incentive Heat Act Strategy – The Heat Act was derived from the Renewable Energies Heat Act in 2009 that was passed by the Federal Government of Germany. By passing the act, solar energy was allowed as a source for heat[56]. Renewable energy is to be promoted and other technologies as well such as efficient heat pumps, wood pellet heaters and solar water heaters are used in achieving the goal. The government offers grants and promotions in order accomplish its goal. There is also funding available from a local financing group, KfW Bankengruppe[57]. The group works with the German government to provide grants

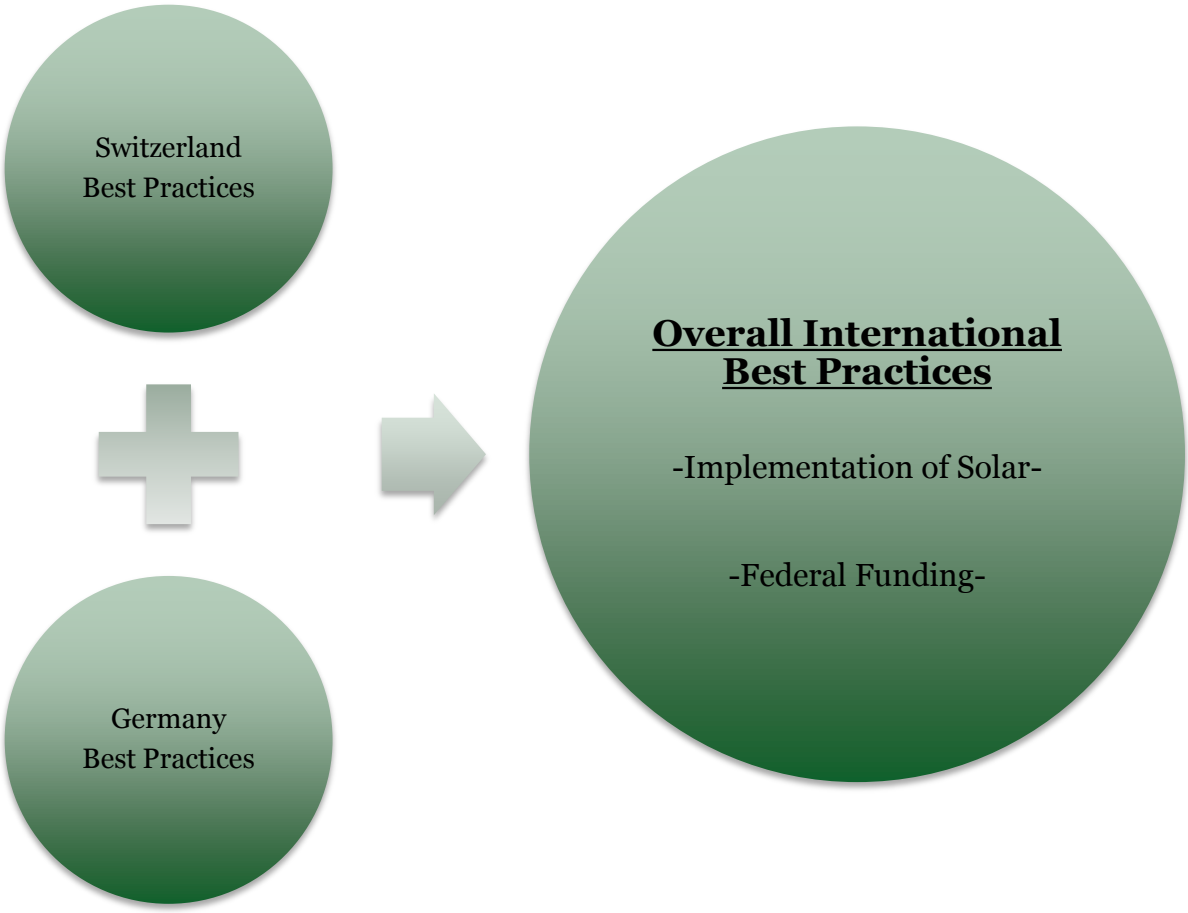
Best Practices International - Germany



[53] (Basel-Stadt and the 2000 Watt Society)
[54] (Environmental Performance Index, 2012)
[55] (Market Incentive Program)
[56] (Solar Energy, 2009)
[57] (Housing, home modernization and energy conservation)

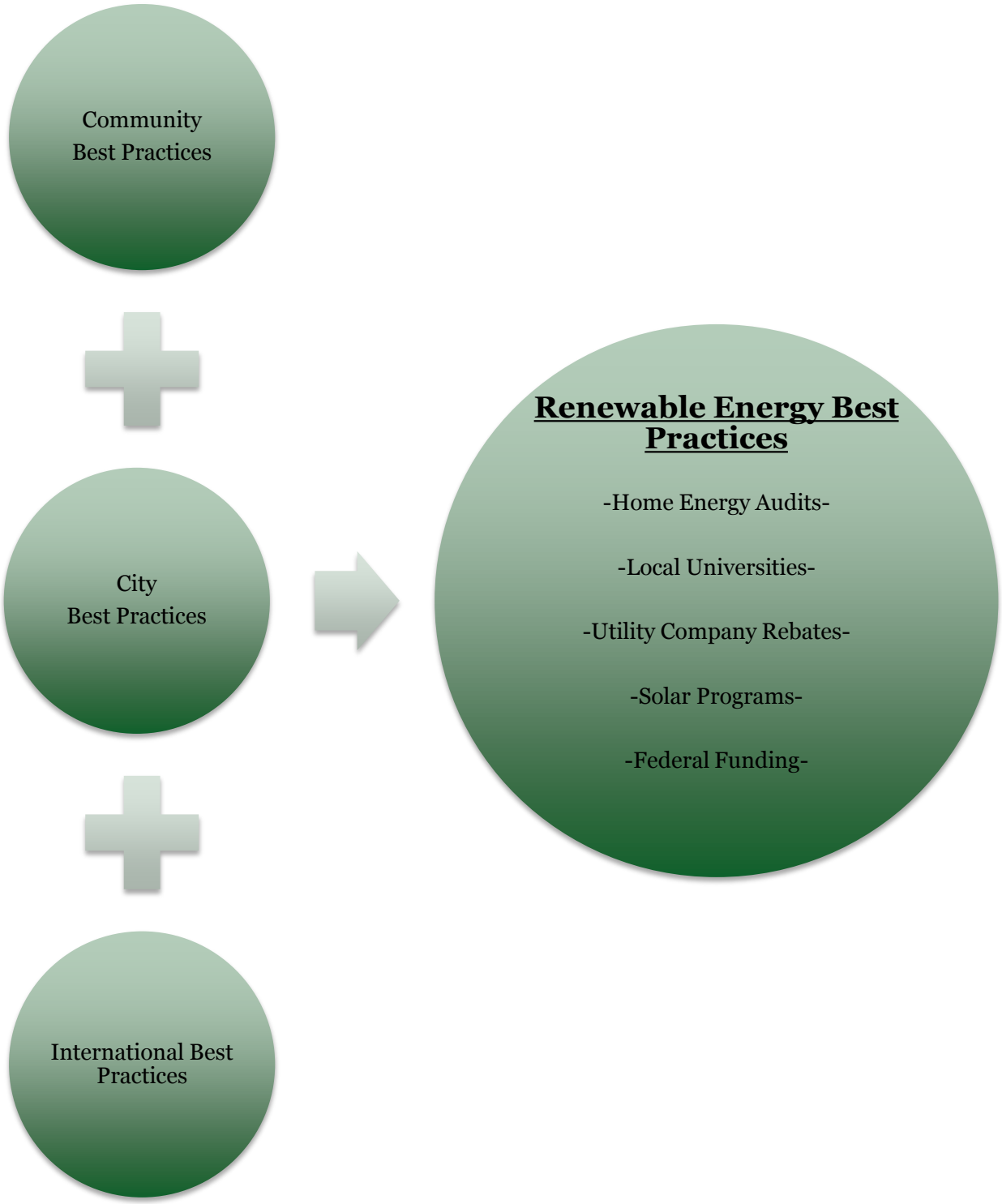
and financing for domestic and commercial energy efficient buildings. Grants awarded from EUR 3,750 to EUR 15,000 are available which are dependent upon completing the energy upgrades. Loans are also made available, up to EUR 75,000[58].

Common practices of Switzerland and Germany are the implementation of solar and federal funding.



[58] (Housing, home modernization and energy conservation)

Common practices among the communities, cities, and international countries are home energy audits, local universities, utility company rebates, solar programs, and federal funding.



Waste Management

Waste management deals with ways an entity might transport, collect, process or dispose of its waste. This section of waste management follows the outline described in the above section

Golden, Colorado

The waste management initiatives of Golden were developed by the community Sustainability Advisory Board along with the Golden City Council and adopted in 2007 for implementation. The City of Golden contracts with the local sanitation company, EDS Waste Solutions to manage their waste pick-ups and inputs[59]. The following highlights a specific goal and strategies that Golden has implemented. It includes waste stream contribution and zero waste events.

Goal #1: Reduce waste stream contributions by 25% by 2017[60].

Waste Stream Contribution Strategy - Golden has implemented a Pay as you Throw trash program for multi-family neighborhoods and commercial buildings to incentivize recycling. Community members do not have to pay for recycling pick ups and can reduce the cost of their trash pick ups by reducing the volume of non-recyclable goods being used and thrown away. This reduces landfill requirements and the costs of non-recyclable waste sorting and transfer, as well as increases the amount of money to be earned by selling bales of recyclable waste. This incentive requires little funding and no increase in machinery[61].

Best Practices Community – Golden, Colorado

[59] (City of Golden)
[60] (Community Working groups and staff, 2007)
[61] (Community Sustainability Advisory Board, 2010)

Working with the event organizers of community organizations, Golden is encouraging "Zero Waste" events where the use of disposable goods is reduced and there are comprehensive recyclable, compost, and trash receptacles to prevent littering and reduce the flow of landfill waste[62]. This initiative has minimal cost with the benefit of encouraging recycling and educating the community of recycling, composting, and waste reduction requirements. This initiative could be expanded to include a "zero waste" requirement at a broad range of community and school events.

Moscow, Idaho

The main focuses of green initiatives in waste management in Moscow, Idaho have been on recycling, organizing waste outputs, and minimizing landfills through alternative means of waste usage. Recycling in Moscow, Idaho originated in 1970 when a volunteer recycling organization began collecting recyclable waste at the University of Idaho[63]. The organization developed the pickup and collection process and in 1974, was incorporated into the local government as the Moscow Recycling Board (MRB) and was subsidized by the city. A decade later, in 1984, the MRB turned recycling over to Latah Sanitation, Inc. (LSI), the private sanitation company that handles waste management for Latah County of which Moscow is a part. Latah Sanitation expanded its facilities and processes to incorporate recycling and hired staff to operate the expansion. Over the next decade, MRB and LSI collaborated to build a recycling curb side program and event pick up system, expand the categories

Best Practices Community – Moscow, Idaho

[62] (Community Sustainability Advisory Board, 2010)
[63] (Latah Sanitation, Inc.)

of waste collected, educate the Moscow community on responsible waste reduction, and close the landfill, using other means to process waste. In the decade and a half since the closing of the landfills, MRB and LSI have increased the recycling pick up rate by 30%, collected well over 70,000lbs of electronic waste, expanded their system to include recycling to 5 different rural communities, and received an award from the National Recycling Coalition. On average, LSI bales 13 tons of recyclable waste a day that can be sold to primary markets or reused in secondary community markets. The fees Moscow pays to LSI per ton of recyclable materials delivered cost approximately 50% of the cost to landfills of the same tonnage of waste[64]. The following sections highlight specific goals and strategies that Moscow has implemented. It includes the city's recycling services and reducing landfill waste.

Goal #1: Expand recycling services to increase recyclable waste volume.

Recycling Services Strategy - In 1990, Latah Sanitation, Inc. developed rural recycling drop of stations to increase the volume of recycling outside of the city's suburban community. LSI places drop off trailers (Figure 1), which can hold approximately 15 tons of waste[65], at certain locations throughout the community. The trailers are picked up on a periodic basis that is determined by a generated forecasted rate of waste drop offs. Yard waste is also dropped off at these sites. One aspect that makes this a reasonable solution for Latah County is that community members in the rural cities have the necessary vehicles (trucks and trailers) necessary to drop off large quantities of recycling. Another aspect that makes this solution reasonable is the low population density of the county. Doing individual pick-ups from residence to

FIGURE 1: RURAL DROP OFF RECYCLING TRAILER

[64] (Idaho Department of Environmental Quality, 2003)
[65] (Latah Sanitation, Inc.)

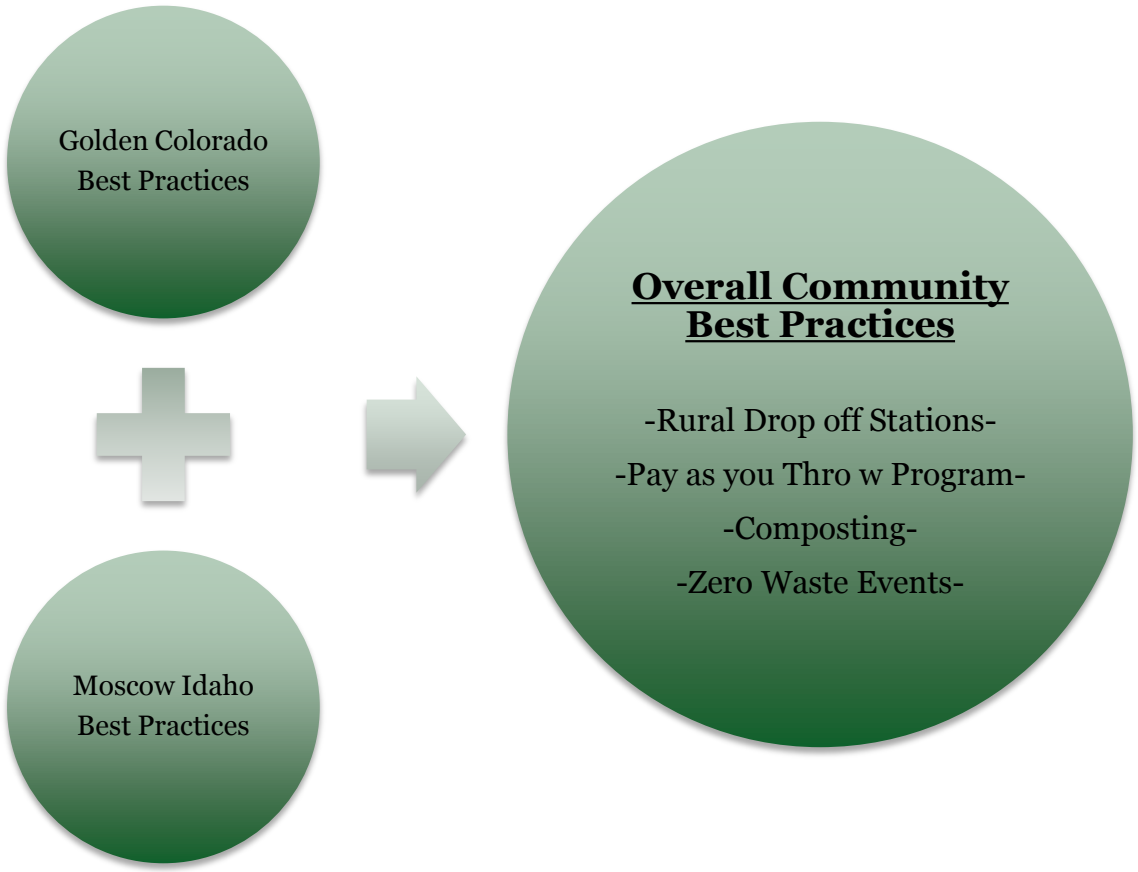
residence would drive up costs. The drop-off stations minimize the cost of pick-ups while still bringing in recyclable materials.

Goal #2: Reduce landfill waste.

Landfill Waste Strategy - Moscow, Idaho creates approximately 8,000 lbs. of bio solid and yard waste a year that is not recyclable, and in most communities this type of waste is deposited in a landfill. Since the closing of the Moscow landfill in 2000, LSI has been diverting this waste to the Solid Waste Processing Facility to create compost that can be sold or given freely to the community. At this facility, the yard waste is ground and blended together at a 6 to 1 ratio with bio solids and deposited in aeration bays where the compost develops over a space of 15 to 30 days. The compost is then moved outside to cure, after which it is ready to be sold or distributed. The composting process and results must meet with the EPA and Idaho State Health and Welfare requirements and requires scientific testing processes to ensure compliance[66].

[66] (City of Moscow)

Common practices of Golden, Colorado and Moscow, Idaho are rural drop-off stations, pay as you throw program, composting, and zero waste events.



SEATTLE, WASHINGTON

Waste Management, Inc. operates waste and recycling pick ups, processing, and management in Seattle, Washington. The company carries out the green initiatives planned by the City of Seattle[67]. The following sections highlight specific goals and strategies that Seattle has implemented. It includes reducing landfill waste, and increasing recycling in the city.

Goal #1: Reduce landfill waste, greenhouse gasses, and conserve natural resources.

Reduction Strategy - Seattle has taken several measures to reduce landfill waste that produces greenhouse gasses and pollute natural resources. One of the most prominent measures in recent years has been a ban on single use food products that are neither recyclable nor compostable in quick serve restaurants, food courts, and institutional food services[68]. In a city with high population density, food service makes up less than 10% of the area industry, yet services nearly 3.5 million people from the Washington metropolitan area. The waste output from these food services contributes significantly to the volume of waste that must be put in a landfill, especially waste like Styrofoam, which does not decompose. Ordinance 122751 was instituted with a six-month "phase out" period for the food service business to replace their banned packaging and utensil products. The ordinance was also amended to require receptacles for recyclable and compostable waste at the quick service restaurants, food courts,

Best Practices City – Seattle, Washington

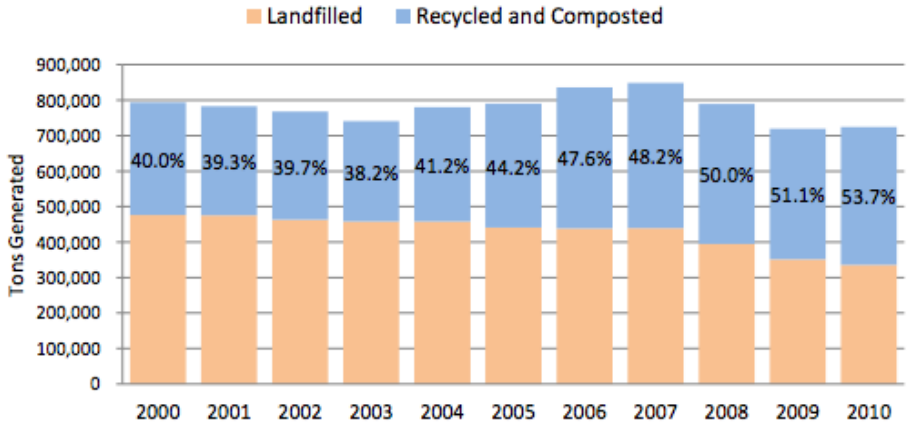
[67] (Waste Management, Inc.)
[68] (Conlin, 2010)

and institutions. Any institutions or businesses that fail to comply with the legal requirements are charged a fine of $250 and face statutory repercussions.[69]

Goal #2: Increase recycling to 60% by 2012 and 70% by 2025[70].

Increase Recycling Strategy - Seattle has been working to reach its goal of 60% of recyclable collected waste and as of 2010 had reached 53.7%.[71] In order to achieve these goals, Seattle and Waste Management, Inc. developed several initiatives to increase the volume of recyclable waste that households were contributing. One initiative was the development of small, portable recycling carts that could be used by those living in apartment complexes. The bins were small enough to be stored in the limited space and light enough to be taken out to the recycling receptacles outside the building. The second initiative was a competition between 10 communities to reduce their non-recyclable waste volume from last year's measurement, which would result in recyclable waste percentages growing. 10 community organizations were selected to represent each community and were responsible for informing the community members about the competition, the positive benefits of recycling, and how to reduce their non-recyclable waste. The community with the highest percentage of waste reduction won a check for $40,000 to be given to the non-profit of their choice. The organization that taught recycling habits and benefits, and promoted

FIGURE 2: A BREAKDOWN OF SEATTLE'S MUNICIPAL SOLID WASTE TONNAGE INCLUDING THE PERCENTAGE THAT IS RECYCLED OR COMPOSTED.



[69] (Office of the City Clerk, 2008)
[70] (Seattle Public Utilities, 2011)
[71] (Seattle public Utilities, 2011)

recycling through social media and public marketing events won a check for $10,000 to be given to the non-profit of their choice as well. Waste Management Inc., who funds the prizes for the competition, developed the educational materials.[72]

All of these initiatives increase the awareness, capabilities, and incentives for households to recycle. It also increases the volume of recyclables, reduces the need for landfill space, and distributes the responsibility to enforce and educate the community on waste responsibilities to local organizations and businesses.

Portland, Oregon

Much like that of their northwest neighbor Seattle, Portland, Oregon is atop of the green conscious cities in the country[73]. Portland has implemented many initiatives to create sustainable development in the city and the surrounding areas. The following section highlights a specific goal and strategy that Portland has implemented. It includes the collection of waste and its disposal and habitat creation.

Portland has an extensive recycling program that has reduced emissions by over 15% since its inception in the early 1990's. This program has done many things including; create over 2,300 jobs, reduce waste emissions emitted into the atmosphere, and generate electricity.

Best Practices City – Portland, Oregon

Goal #1: Waste Collection and Disposal and Habitat Creation

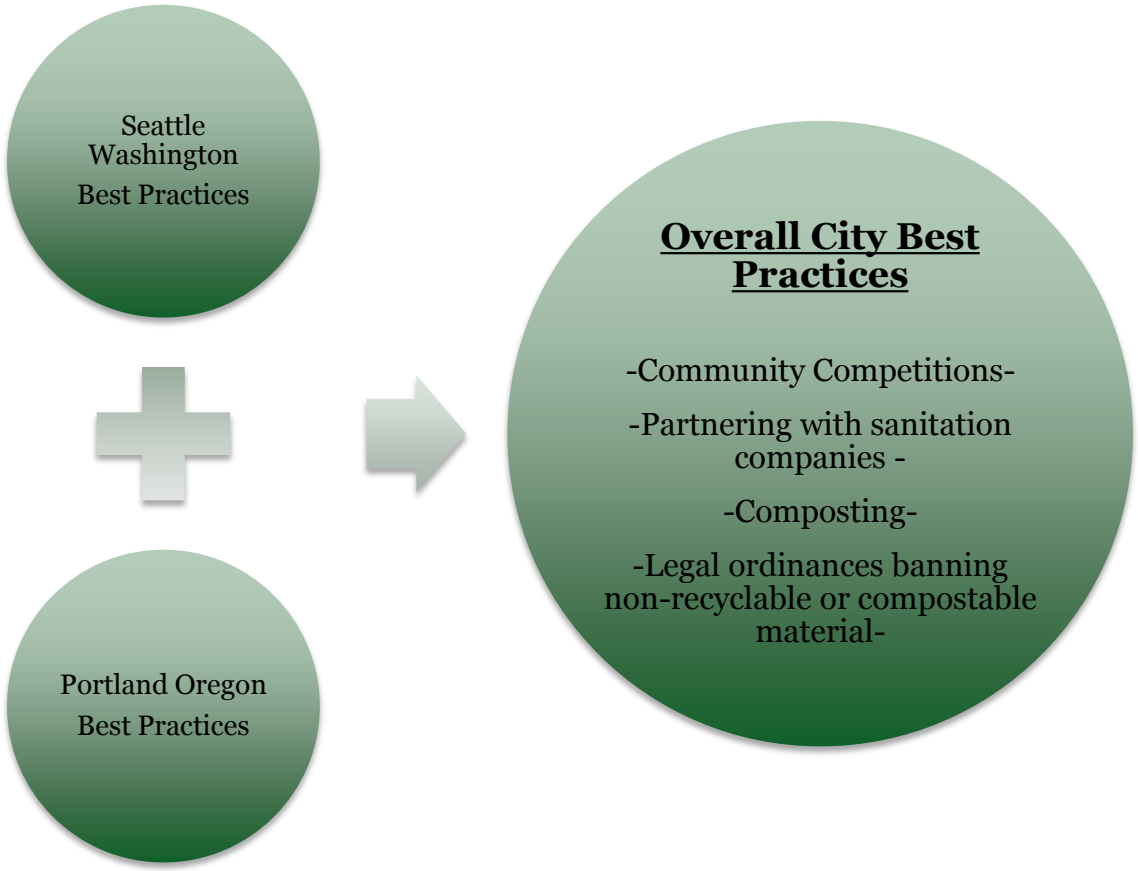
Waste Collection, and Habitat Creation of Landfills Strategy - Waste is collected from both residential areas as well as commercial industries. This allows for the elimination of waste anywhere in the region. The waste is then

[72] (Waste Management, Inc., 2012)
[73] (Americas Greenest Cities 2012)

disposed of either by incineration or other means. This disposal method creates electricity to power almost 5,000 homes[74].

Proving waste management has done the job it set out to do, in 2010 the city of Portland received national acknowledgement for its Greater Wenatchee Landfill. This landfill created 140 acres of endangered "shrub-steppe" habitat as part of a wider effort to advance biodiversity in the region.[75]

Common practices of Seattle, Washington and Portland, Oregon are community competitions partnering with sanitation companies, composting, ordinances banning non-recyclable or composting material



[74] (Waste Management in the Pacific Northwest)
[75] (Waste Management in the Pacific Northwest)

Best Practices International - Switzerland

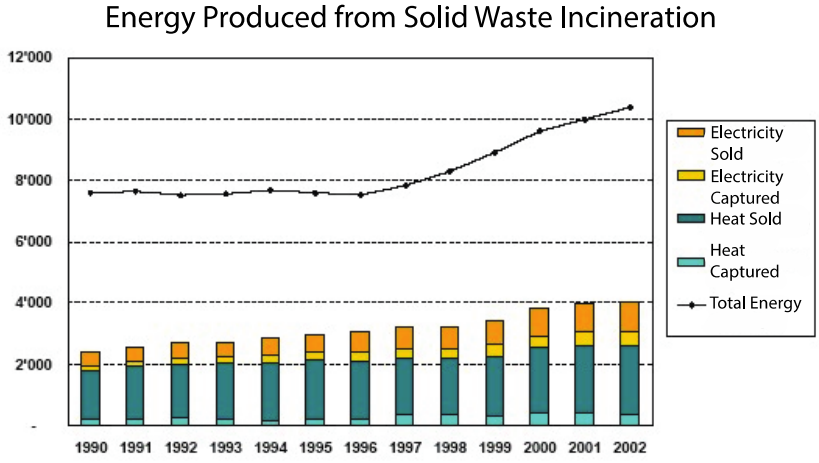
SWITZERLAND

The primary focuses for Switzerland's green initiatives regarding waste management have revolved around sustainable creation through waste. The following section highlights a specific goal and strategy that Switzerland has implemented. It includes creating a closed loop for waste.

Goal#1: Created closed loop production by utilizing waste.

Close Loop Production Strategy - The first initiative Switzerland took to creating closed loop production was banning the use of landfills in 2000. This initiative increased the pressure on Switzerland's six recycling organizations to increase recyclable waste percentages, as well as find an alternative solution for non-recyclable waste. Switzerland developed a use for non-recyclable waste in 2004 by incinerating it in its Municipal Solid Waste Incineration (MSWI) facilities. The facilities are capable of incinerating 3.29 million tons of solid waste and reduce the volume of waste by 90% and reduce the weight by 75%. The remnants of the incinerated waste must be deposited in remnant waste landfills which can be expensive. However, 10% of the energy output of the incineration can be utilized as electrical energy and over 40% of the energy output used for district heating. The 28 MSWI facilities

FIGURE 3: ENERGY PRODUCED BY THE 28 MSWIS

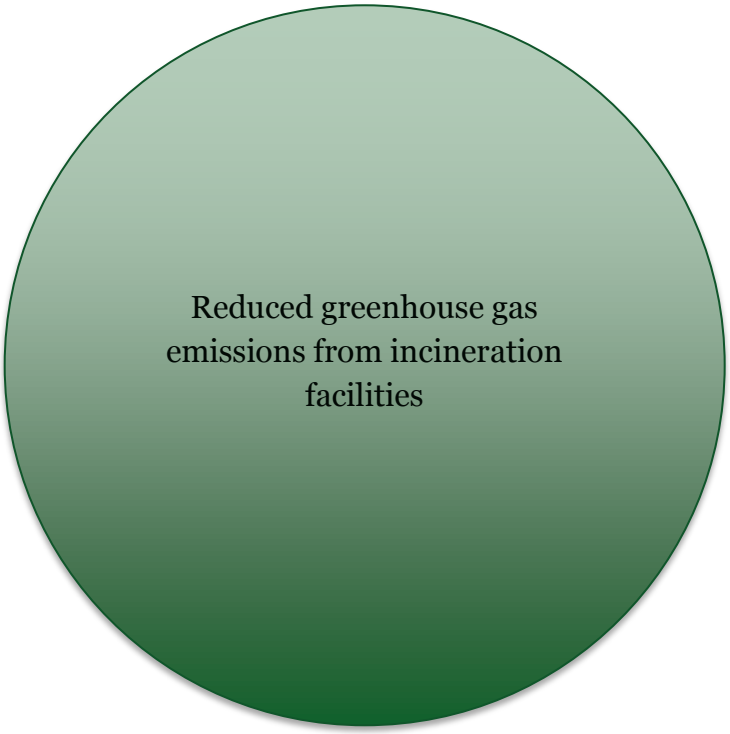


generate 2% of the nation's energy, which balances out the investment required to install Denitrification (DeNOX) equipment to reduce the sulphur dioxide, hydrochloric acid, nitrogen oxide, ash, and dust emissions from MSWI's[76]. To complement the closed loop, Switzerland's Municipal Solid Waste facilities sort through solid waste prior to incineration to remove, clean, and sell reusable raw materials[77]. All of these initiatives are geared towards eliminating reusable objects from the category of waste and getting something in return for the waste that is non-recyclable.

GERMANY

Germany first began observing sustainable waste management in 1990[78]. Germany felt their "throw away economy" did not provide the ability for the country to sustains itself. Disposable waste in Germany has increased from 12% in 1990 to 46% in 2001[79]. This number does not include material waste that was already being recovered and disposed of at the time of the program's inception.

Best Practices International - Germany



This increase in waste over the span of a decade prompted Germany to seize the opportunity to implement a waste management program that would discard all appropriate waste. This program has reduced relevant climate emissions by 15% in the same span. The impact of the savings was equivalent to 2.5 million citizens not disposing of waste[80]. The

[76] (Federal Office of the Environment)
[77] (Federal Office for the Environment, 2012)
[78] (The Contribution of Waste Management to Sustainable Development in Germany, 2002)
[79] (The Contribution of Waste Management to Sustainable Development in Germany, 2002)
[80] (The Contribution of Waste Management to Sustainable Development in Germany, 2002)

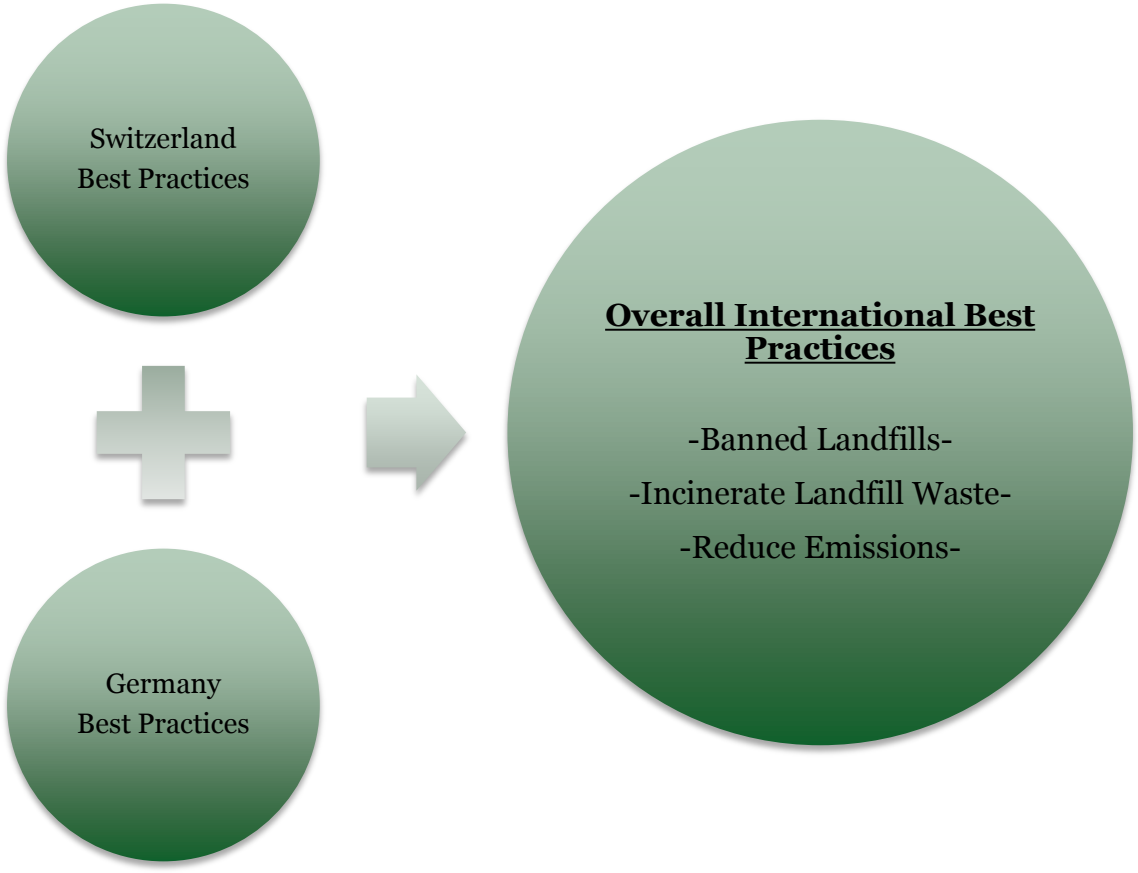
following section highlights a specific goal and strategy that Germany has implemented. It includes reducing greenhouse gases.

Goal #1: Reduce greenhouse gas emissions from incinerated waste.

Gas Emission Reduction Strategy - Waste incineration plants throughout Germany were capable of reducing their Emissions of carcinogenic substances to nearly one thousandth of the levels they were in 1990[81]. This was made possible by the 17th Federal Emission Control Ordinance and its stringent guidelines. This reduction in emissions being pumped into the atmosphere was a direct attempt to stall the every spreading idea of Global Warming and its effects on the planet.

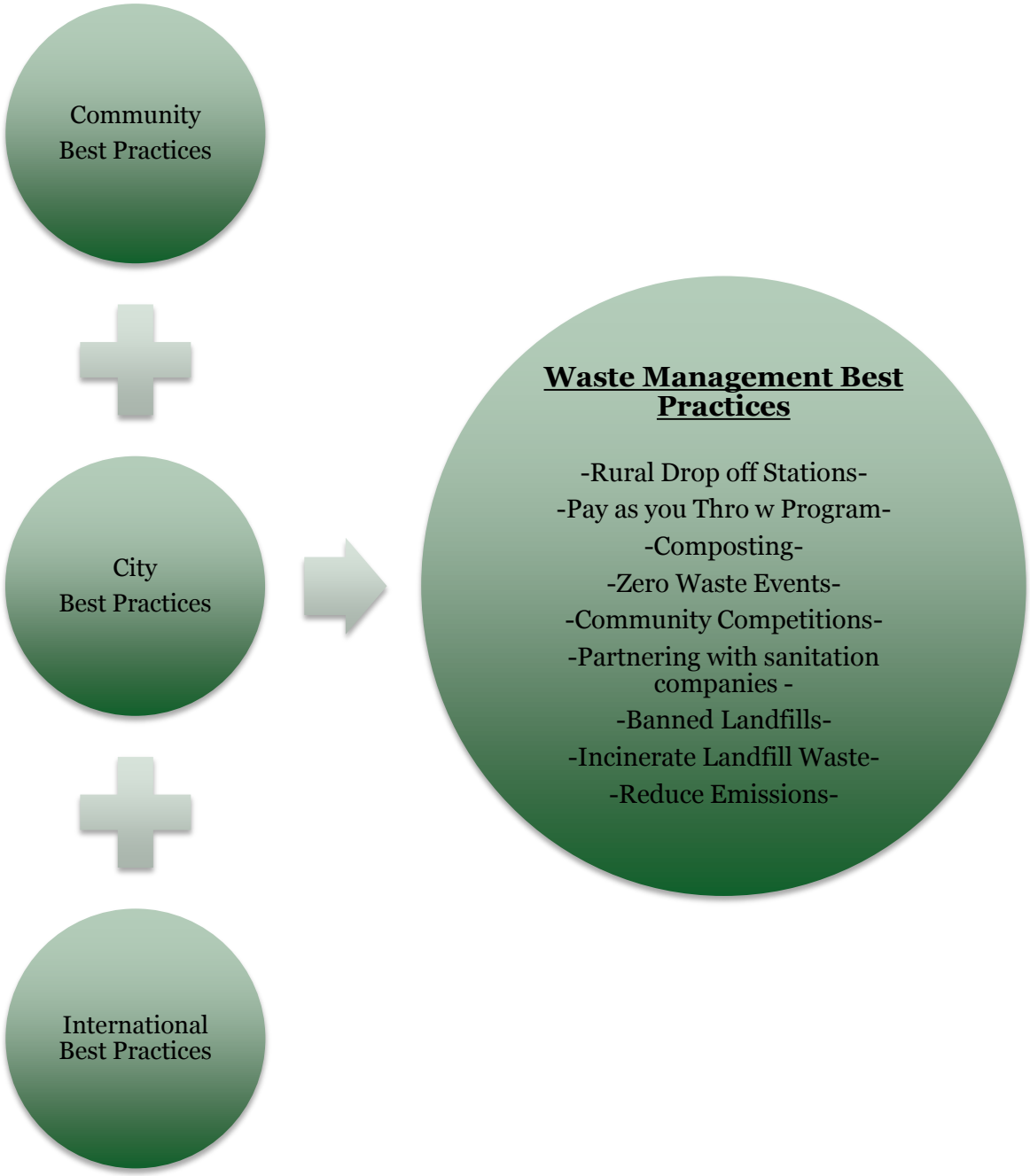
Overall, Germany has made conscious efforts to reduce emissions in the country. Germany has done this by strict legislation that requires certain protocols be observed.

Common practices of Switzerland and Germany are banning of landfills, incinerate landfill waste, and reduce emissions.



[81] (The Contribution of Waste Management to Sustainable Development in Germany, 2002)

Common practices among communities, cities, and international countries are rural drop-off stations, pay as your throw program, composting, zero waste events, community competitions, partnering with sanitation companies, banning of landfills, incineration of landfill waste, and reduce emissions.



Alternative Transportation

Alternative transportation deals with ways an entity might decrease the effects of transportation on the atmosphere. This section of alternative transportation follows the outline as the section above.

Golden, Colorado

Golden has multiple projects revolving around becoming more sustainable. As part of their plans, the city introduced Resolution 1793 to make the city more sustainable[82]. According to the city's website on alternative transportation, the city of Golden made a goal to reduce Vehicle Miles Traveled (VMT, defined by the city as "all miles traveled by cars, trucks, and other similar motorized vehicles") by 15% by the year 2017[83]. The following section highlights a specific goal and strategy that Golden has implemented. It includes a reduction of vehicle miles traveled by bikers being able to commute to work.

Best Practices Community – Golden, Colorado

Golden Goal #1: Reduce Vehicle Miles Traveled by 15% by 2017.

Reduction of VMT Strategy - The city's website on alternative transportation gives more detail on how Golden is working to accomplish its goal. To facilitate the success of this goal, and because a large number of the population in Golden commute to Denver for work each day, the city makes available public transit buses to Denver. As additional incentive, the city provides secure bike storage facilities at bus stops. This is for people who need to ride a bicycle to their bus stop each day. Citizens have a safe place to leave their bikes until returning from work and can ride home. Funding for this project comes from the city's general fund.

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[82] (Golden, Community Sustainability Advisory Board, 2012)
[61] (Golden, Alternative Transportation, 2012)

Moscow, Idaho

In 2009, according to the city's website, the city adopted the Comprehensive Plan which "sets forth goals and strategies to meet its long-term vision for vibrancy, sustainability, and a multimodal approach to transportation."[84] The projects of Moscow aim to encourage public transportation by making public transit more accessible to the public. By making public transit the more feasible option for travel, the community is able to gain riders and reduce emissions. The following section highlights a goal and strategy that Moscow has implemented. It includes the city's VanPool transportation.

Moscow Goal #1: Encourage public transportation by making alternative transportation more accessible to the public.

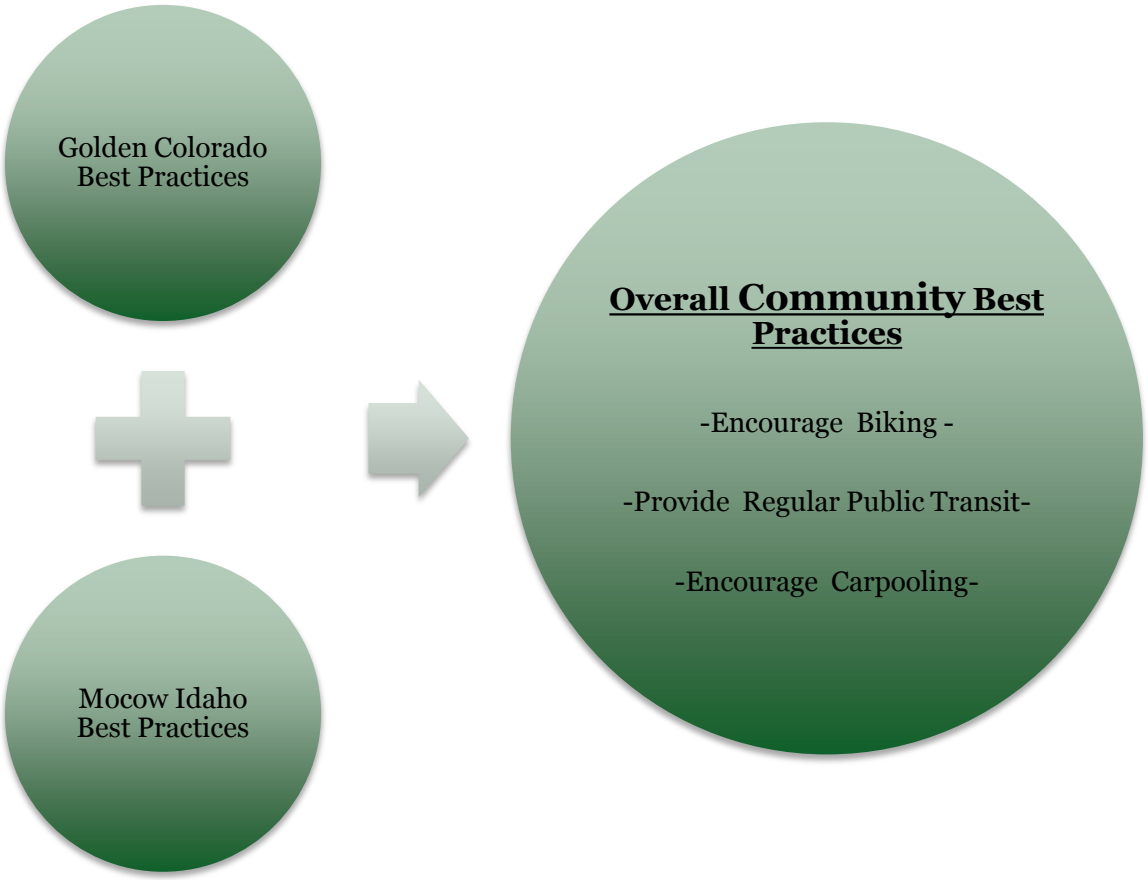
VanPool Strategy - VanPool, as discussed in detail on the city's VanPool webpage[85], helps in much the same way as the aforementioned Golden project. The city currently provides three vans to meet the needs of the community and offers routes between Lewiston and Moscow. The vans run Monday through Friday, arriving in Moscow at 8am and departing at 5pm. According to the website, it costs passengers $107 per month. Prices are customized on routes and are strictly cost-based.

Best Practices Community – Moscow, Idaho

Moscow VanPool provides a variety of amenities including bike racks, cup holders, Sirius Radio and power outlets for each seat. Services also include guaranteed rides in case of emergencies, discounts, and peace of mind. Funding for this is provided by grants from the Idaho transportation Department and the American Recovery and Reinvestment Act. The public can easily search on the website for and find official information on the program straight from the City.

[84] (Moscow, Moscow on the Move, 2012)
[85] (Moscow, City of Moscow VanPool, 2012)

Common practices of Golden, Colorado and Moscow, Idaho are to encourage biking, provide regular public transit, and encourage carpooling.



Best Practices City – Seattle Washington

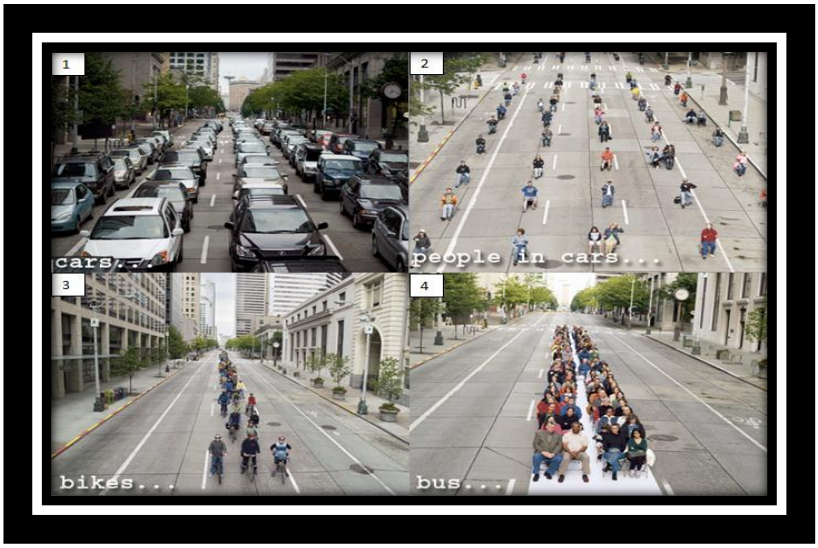
SEATTLE, WASHINGTON

The following are some highlights of goals and strategies that Seattle has created and started to implement throughout the city.

Seattle Goal #1: Reduce emissions by providing riders with regular transit service connecting the region to urban villages.

RapidRide Strategy - Described in detail on the city's RapidRide webpage[86], the city's main webpage for building a sustainable transportation system[87] (which contains the graphic depicted in Figure AT2) gives a general description of projects implemented or in the process of implementation. RapidRide is a program which started as a result of Seattle Connections, the city's transit plan, its goal is to provide residents with transportation every 15 minutes, and runs 18 hours a day all through the week. The system connects 37 communities throughout the region[88].

Figure AT2



RapidRide seeks to reduce individual transportation and encourage public transit. RapidRide is a bus system which provides service on a

[86] (Seattle, RapidRide, 2012)
[87] (Seattle, Building a Sustainable Transportation System, 2012)
[88] (Seattle, RapidRide, 2012)

regular basis and offers the citizens of Seattle a means of alternative transportation. The initiative offers transit hubs in popular locations around the city. This facilitates the travelling needs of the city between high-demand locations. Funding for this initiative is provided by the city's "Bridging the Gap" fund, a nine-year levy for transportation maintenance and improvements, discussed in detail on its respective webpage[89].

This initiative has many advantages which have created success over the years. The first of these is the "Bridging the Gap" fund which provides the financial means for this initiative. Community awareness and involvement are key components to the success of this program. Support from the city itself plays a substantial role in the program's success. Finally, the city has a website dedicated to transportation. This website is easily accessible to the public and gives detailed information on each of the city's initiatives regarding alternative transportation.

PORTLAND, OREGON

The following section highlights a specific goal and strategy that Portland has implemented. It includes reducing free employee parking.

Portland goal #1: Reduce the amount of personal tranportation by discontinuing the practice of free employee parking.

Employee Parking Strategy - Employee Parking and can be found in a link entitled "Transportation Tool Kit"[90] on the city's SmartTrips Business webpage, which outlines different strategies for employers to become more sustainable. This began as a result of the city's Resolution #36468 creating a Sustainable City Government Partnership[91] which aims to keep the city moving toward sustainability.

The project itself aims to reduce vehicle emissions by reducing the number of vehicles driven. The method being implemented by the city calls for employers to cease offering free parking to its employees. According to the webpage, "charging for parking is arguably the single most effective tool for reducing drive-alone commutes." Employees are required to purchase parking permits or passes. This is the consequence if they choose to drive rather than bike or walk.

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[89] (Seattle, Bridging the Gap - Building a Foundation that Lasts, 2012)
[90] (Portland, Employer Transportation Tool Kit, 2012)
[91] (Portland, Sustainable City Government Partnership, 2012)

The advantage of the project is mainly community awareness and involvement and has the support of the city. In addition, the website provides a great deal of information to those who would investigate such as Portland's citizens. The main website[92] allows individuals and businesses to explore the many programs and initiatives being implemented. It also affords the public an easy way to access information, as well as order tool kits to help them become more green. The city, through the website, provides help for those who wish to become "green certified".

Best Practices City – Portland, Oregon

[92] (Portland, Portland Bureau of Transportation, 2012)

Common practices of Seattle, Washington and Portland, Oregon are to encourage biking, provide regular public transit, encourage carpooling, and free bike rack installation.

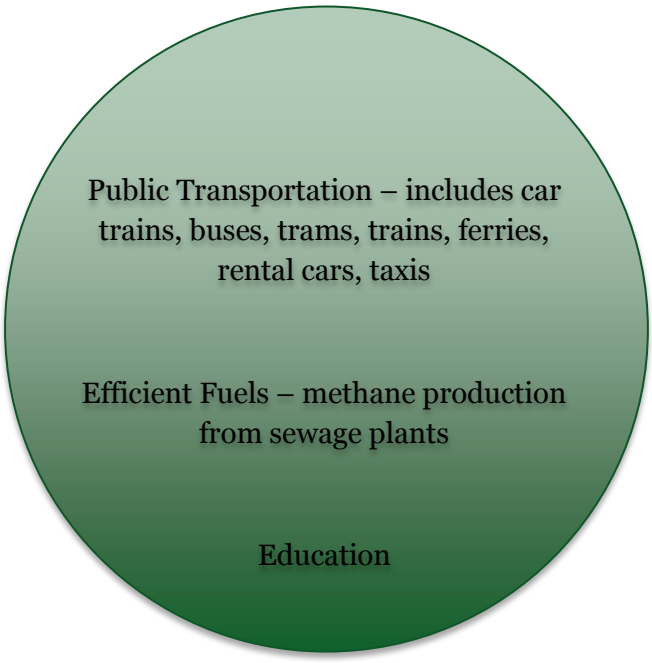
SWITZERLAND

The following are some highlights of goals and strategies that Switzerland has created and started to implement throughout the country.

Switzerland Goal #1: Use clean fuel by converting methane from sewage plants.

Methane Strategy - According to an article in China Daily, Switzerland has been working in various ways to become clean and green[93]. This is a result of standards set by UNEP, of which Switzerland is on the board[94]. The aim of the project is to become more sustainable through alternative fuels for transportation. This project relates somewhat to waste management, but falls in alternative transportation since it is a means of providing fuel to make transportation clean. The project being carried out by Switzerland pertains to the city of Bern. According to the aforementioned article in China Daily, when in Bern, one may see buses with a white leaf pasted on them. This signifies that the bus is powered by methane. Methane is a clean fuel which can reduce fuel cost of buses by 40% compared to diesel. Methane can be produced from sewage plants. The article states, "about one third of buses in Bern have adopted the clean energy.[95]"

Best Practices International - Switzerland

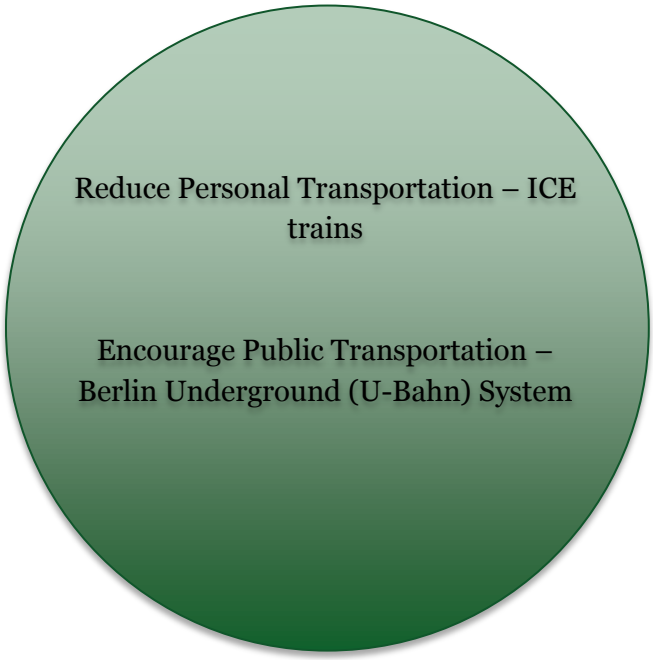


[93] (Xiaoning, 2008)
[94] (UNEP, 2012)
[95] (Xiaoning, 2008)

GERMANY

The following are some highlights of goals and strategies that Germany has created and started to implement throughout the country.

Best Practices International - Germany

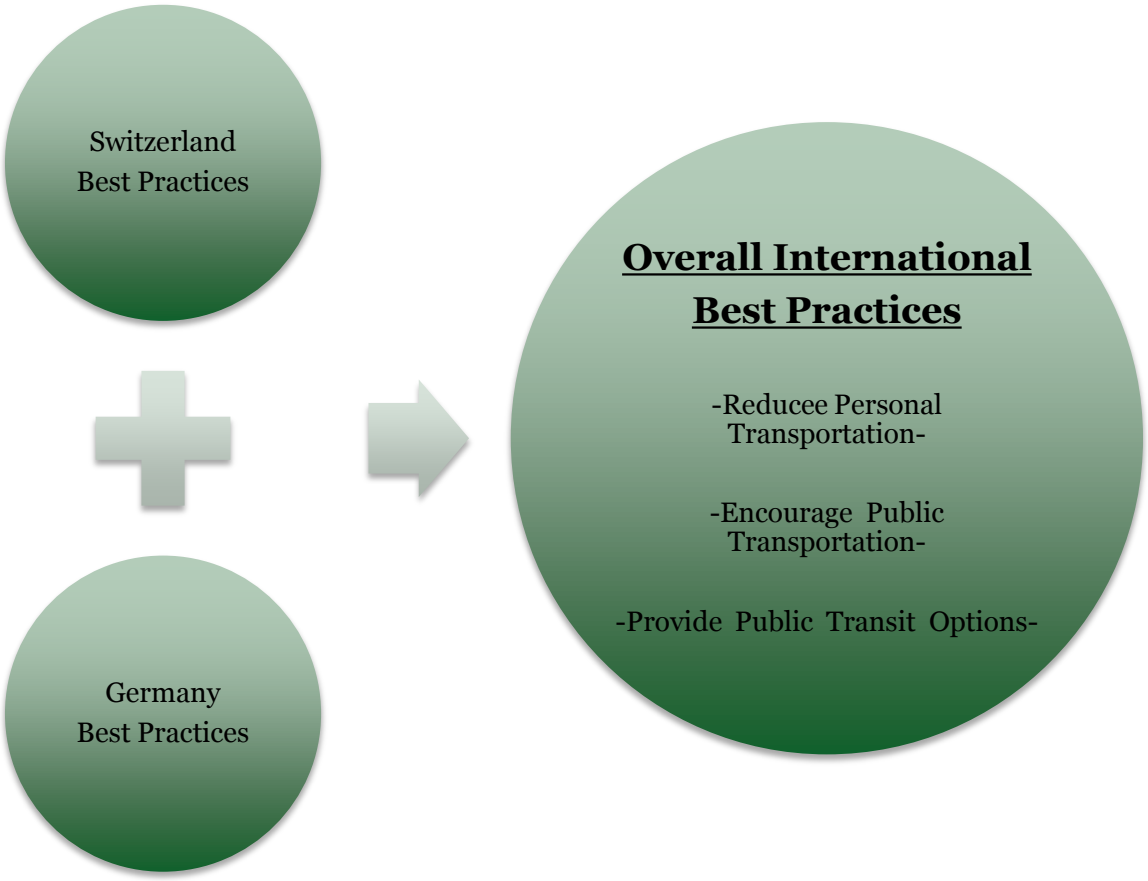


Germany Goal #1: Reduce personal transportation through encouragement of use of public transit.

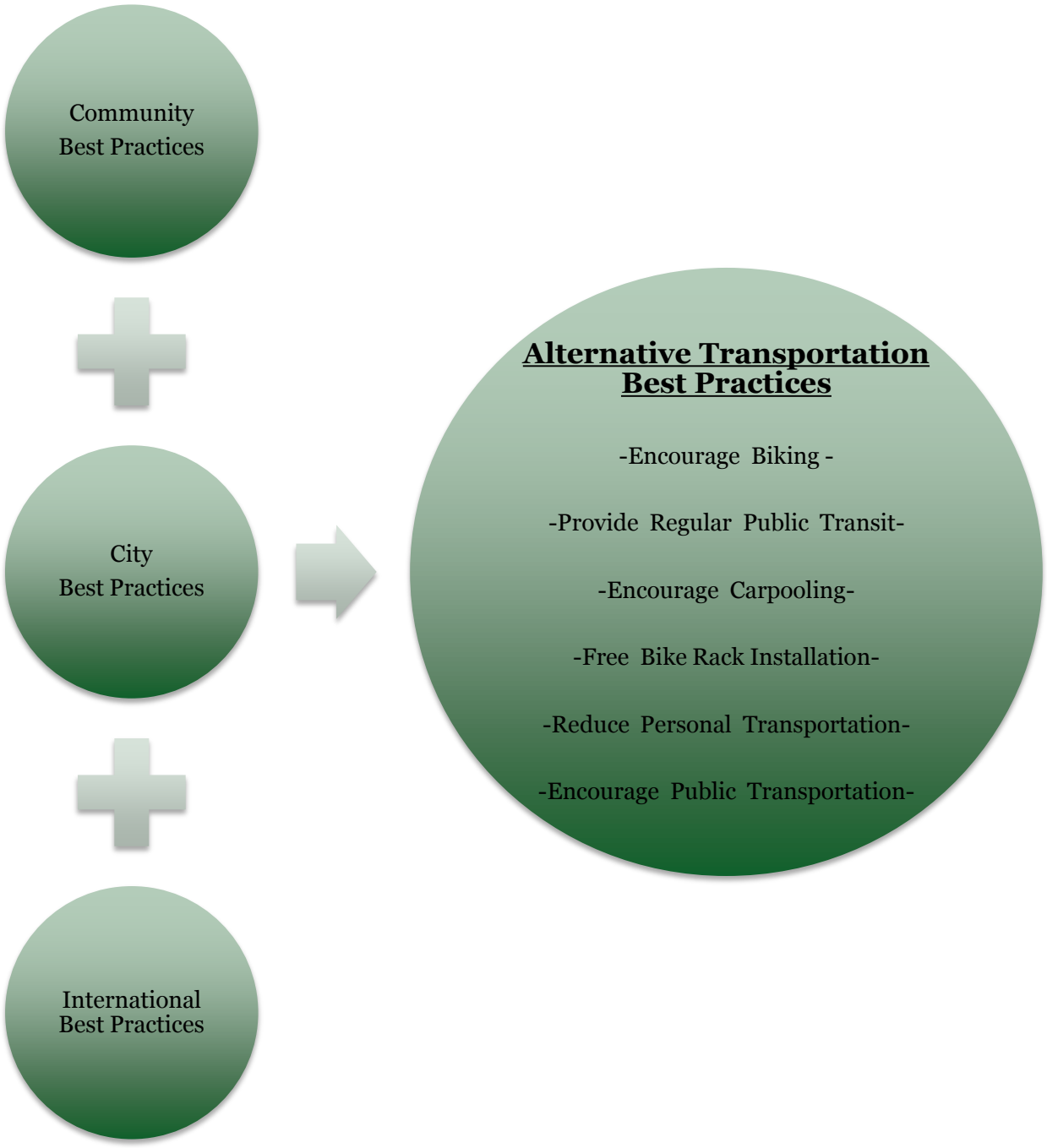
Reduce Personal Transportation Strategy - Germany uses the Berlin Underground (henceforth referred to as U-Bahn) system among others. The U-Bahn system began as a way to travel without taking up excess space. However, Germany has become more green over the years. This is due to the fact that, like Switzerland, Germany is also on the board of UNEP[96] and submits itself to the standards it sets forth. The aim of U-Bahn is to decrease personal transportation and increase public transit via underground transportation. The U-Bahn system used in Berlin is a sophisticated network of underground transportation that connects cities all over the country. Travelers can go between different cities quickly and efficiently. Berlin Transport (BVG) stated of the U-Bahn system that it is, "one of the most modern systems in all of Europe and the most extensive public transport network of its type in Germany."[97] The system invites the public to use this as a means of transportation. It provides efficient and complete transportation to all popular cities as well as many of the smaller ones.

[96] (UNEP, 2012)
[97] (BVG, 2012)

Common practices of Switzerland and Germany are to reduce personal transportation, encourage public transportation, and provide public transit options.



Common practices for community, city, and international countries are to encourage biking, provide regular public transit, encourage carpooling, free bike rack installation, reduce personal transportation, and encourage public transportation.



Water Management

Water management deals with ways an entity might develop, distribute, and manage the use of its water resources. This section of water management follows the outline as the section above.

Golden Colorado

The following are some highlights of goals and strategies of water management that Golden Colorado has started and implemented throughout the community.

Goal #1: Reduce per capita water consumption by 15%[98].

Xeriscape Strategy – The climate of Golden Colorado is similar to that of the four counties. Both locations, Idaho and Colorado, have semi arid climates. Golden has focused on water conservation because of the area in which they are located. To cope with this type of climate Golden has instituted Xeriscape landscaping practices. "[Xeriscape] is derived from the Greek word "xeros", meaning "dry" and combined with landscape, to mean water efficient landscape design and practice.[99]" The goal of Xeriscaping is using less water and becoming more efficient in landscaping practices. The steps that Golden has laid out for its residents for Xeriscaping are listed on their website, and are as follows:[100]

1. Developing a practical design and layout for landscaping
2. Check your soils and change if necessary
3. Decide where to incorporate turf areas in your designs
4. Plant that are drought resistance work best
5. Incorporate an efficient irrigation system into your plan
6. Decide where to place mulch in areas of the landscape to help deter weeds
7. Maintain your landscaping with regular checkups

[98] (Sustainability)
[99] (Water Conservation)
[100] (Water Conservation)

Moscow Idaho

The following are some highlights of goals and strategies of water management that Moscow Idaho has started and implemented throughout the community.

Goal #1: Preserve local aquifers for future use and sustainability.

Aquifer Strategy – Part of the strategy for preserving the aquifers of Moscow Idaho was to create a Palouse Basin Aquifer Committee. The committee's objectives are to share information among the participants and to develop strategies for ground water management[101]. The city of Moscow invests $100,000 annually to promote water conservation and activities to its residents. Beginning in 2004, during the watering season, the city employed water limiting times throughout a regular day. It also barred watering resistant surfaces such as asphalt or concrete. The city has also installed leak detection devices into the water system to check for leaks and installed a repair program for when they occur. There have been voluntary approaches the city has taken in order to conserve water. These steps include giving water tips, performing irrigation audits, informing residents about Xeriscape, and notify the residents of water saving devices[102].

Seattle

The following are some highlights of goals and strategies of water management that Seattle Washington has started and implemented throughout the city.

Goal #1: Queen Anne Water System Improvements – Check for seismic failure of water pipes.

Queen Anne Strategy – During a seismic test on the water pipes in Seattle the Seattle Public Utility (SPU) discovered that there were two standpipes which were at high risk during the evaluation. Residents in the area also complained about a lack of water pressure throughout the homes. A Grant of two million dollars was obtained for the replacement of the standpipes in the city. The grant also aided in creating a new underground water pumping station[103]. The pumping station was created to solve the issue of the water pressure for the residents. The project in total cost the city $15 million dollars and was started in 2007. Some of

[101] (Moscow Comprehensive Plan)
[102] (Moscow Comprehensive Plan)
[103] (Queen Anne Water System Improvements)

the improvements that were made when implementing the new repairs and new water system are as follows[104]:

- Reliability of standpipe improvements
- Water pressure improvements of nearly 600 households in the area
- Water reliability improvements of nearly 30,000 households in the area

PORTLAND

The following are some highlights of goals and strategies of water management that Portland Oregon has started and implemented throughout the city[105].

Goal #1: Improve maintenance of the water system infrastructure.

Water System Infrastructure Strategy - Implement a risk bases asset management approach to assist in managing operations, construction and capital planning. As this approach improves the service effectiveness improves with the available resources. To improve the infrastructure of the current water system construction crews are needed that are of the right size. The construction crews will also be based on size and skill that match the project. The crews are required to obtain OSHA certification. Along with the improvement of infrastructure development of key system data being available this includes the first phase of mobile technology and completion of Geographic Information System (GIS) mapping[106]. Funding for the project comes from the city. Within the water management system 60% of the vacancies are filled with internal candidates. Job creation from this goal and strategy is unknown.

SWITZERLAND

The following are some highlights of goals and strategies of water management that Switzerland has started and implemented throughout the city[107].

Goal #1: Maintain health of people, animals and plants.

Water Protection Strategy – The Water Protection Law was instituted in 1991. The purpose of the law in its present state is to protect the waters of Switzerland from all harmful effects. Groundwater protection areas have been implemented within cities of Switzerland. City officials will determine certain areas that are

[104] (Queen Anne Water System Improvements)
[105] (Portland Water Bureau)
[106] (Portland Water Bureau Strategic Water Plan, 2008)
[107] (Agriculture and Water Protection, 1993)

important for future use in water management. Once officials have determined a space there is to be no buildings or installations on the site. The funding for the Water Protections comes from the federal budget. Job creation from this goal and strategy is unknown. Job creation from this goal and strategy is unknown.

GERMANY

The following are some highlights of goals and strategies of water management that Germany has started and implemented throughout the city[108].

Goal #1: Prevent and control groundwater pollution.

EU Groundwater Directive Strategy – Conduct reliable and comparable methods in order to monitor groundwater quality and choose the best standards. An assessment of groundwater is implemented and determines if the groundwater is at risk from being contaminated. After the assessment has been completed and chemical levels are read then a confirmation status is applied. The program is integrated into surface waters as well as aquifers[109]. The funding for this directive comes from the federal budget. Job creation from this goal and strategy is unknown.

LAND MANAGEMENT

Land management deals with ways an entity might manage the use and development of land resources. This section of land management follows the outline as the section above.

MOSCOW IDAHO

The following are some highlights of a goal and strategy that Moscow has created and started to implement throughout the city.

Goal #1: Improve the city of Moscow's landscaping and aesthetics.

Landscaping Strategy - Moscow does make an asserted effort to beautify their streets and their public lands. The purpose of this goes beyond simply aesthetics. Secondary reasons for the improved landscaping in public areas are to increase water conservation and increase business flow. Studies have shown that buildings

[108] (Directive, 2006)
[109] (German Experience in Assessment of Groundwater)

and business that have more attractive landscaping in fact bring in more business. Moscow is trying to reflect this research by maintaining their businesses to be aesthetically pleasing. This allows for the economy to grow locally by supporting to local businesses. The City of Moscow also has some non-government funded agencies that encourage the redevelopment of deteriorating facilities and buildings. The agency is divided into 2 districts; Alturas and Legacy Crossing. These agencies again are not provided with funds by the government, but instead are responsible for their own funding[110].

Portland Oregon

The following are some highlights of a goal and strategy that Portland has created and started to implement throughout the city.

Goal #1: Preservation of local lands.

Preservation Strategy - The main practice that Portland applies is the purchasing of land. The local government buys the land to prevent further development by industry. The overall goal of this initiative is to prevent the eventual pollution that is created by building and larger industrial facilities. By purchasing the land, the government allows the natural landscape to grow and increase in foliage. This growth of nature allows for fewer emissions being released into the atmosphere and increases sustainability of the local environment[111].

[110] (Moscow Community Development, 2012)
[111] (Environmental Services, 2012)

RECOMMENDATIONS

The list of recommendations is organized in order of priority beginning with; Renewable Energy, Waste Management, Alternative Transportation, Water Management and Land Management. The recommendations that follow are dependent on what the communities, cities, and international countries are currently doing or have done in the past.

RENEWABLE ENERGY

1. Home Energy Audits:

The home energy audit programs that Golden, Colorado and Moscow, Idaho have implemented throughout their communities are something that should be considered. With the added benefits of partnering with local utility companies and the giving of rebates to the residents who participate in home audits, this strategy makes the program very affordable for residents. Additionally the certification of a Business Analyst from BPI and the training programs that were offered to aid in the certification process create job prospects for local contractors or new businesses trying to find a niche in home markets. The home energy audit strategy has been used both by the community level and the city level.

2. Solar Programs:

In all three areas that were researched of the community, city, and international levels all had a common theme of initiating solar programs. Tax incentives and rebate programs offered by governments and utility companies for residents make solar programs advantageous for the area. With residents knowing that installing a solar panel system on a house, buying in bulk as a community, and having the option of green energy, provides incentives for the programs that have been implemented. In addition, solar installation produces demand for contractors and has the potential to create job prospects for installation and maintenance of the equipment.

3. Other recommendations:

At the community level Golden, Colorado partners with the local university. In hiring the students as interns the community is able to keep costs relatively low and able to receive some valuable information from research that the students do. Creating a partnership with BYU-Idaho is something that should be considered in order to propel the movement of a green economy in Southeastern Idaho along.

Waste Management

1. Reduce landfill waste through recycling in combination with one of the following methods:

Composting has been a means of reducing landfill waste in all of the communities and cities researched, and can reduce landfill waste volume by several thousand pounds per year. Composting is useful in regions with a large volume of yard and biosolid waste and can reduce landfill costs similar to cost reduction in Moscow, Idaho.

Incinerating waste, as done in Switzerland, greatly decreases the space needed for non-recyclable waste and can provide sustainable energy and heat resources, reducing independence on fossil fuels. Incineration does require substantial investment but the return on job creation puts the investment to good use.

2. Rural drop off stations:

Establishing recycling practices in rural regions can be expensive in the process is dependent on household pick-ups. Collecting recycling in these rural regions can be managed more cost effectively by establishing a rural drop off station. Recycling and yard waste volume can be measured and used to evaluate the cost structure of the inputs. These cost analyses will provide future direction on expanding rural recycling initiatives.

3. Partner, participate, and communicate with recycling plant in Rexburg:

Having initiated a strategic recycling plan in a small, rural town with a local college, the recycling plant in Rexburg, Idaho has a beginning very similar to Moscow, Idaho. Processes and practices can be learned from the plant, detailed cost and market information gathered, and information on developing a partnership with them, or another sanitation company could be attained.

4. Use local groups to spread the word on recycling, by educating the communities and children, and using recycling at events:

Across all researched locations, utilizing local organizations to educate the community about recycling processes, develop recycling habits, and increase the recyclable waste volume has been a key factor to successful waste management. Utilizing these organizations will reduce marketing costs, involve the community, and strengthen community commitment to the green initiatives.

Alternative Transportation

1. Alternative Systems:

The systems implemented by Golden, Moscow, and Seattle are all very similar in that they seek to encourage public transit as an alternative means of transportation and also have bike storage facilities. Using a bus system or implementing a system such as Moscow, with 3 vans running daily could be implemented in Southeastern Idaho as a means of transportation for citizens and reducing emissions. Residents of the counties could benefit a great deal from public transit. In addition, the community itself would benefit from bus pass revenues.

2. Methane Conversion:

From the research of Alternative Transportation, methane conversion is a path with great potential. It is an area at which the four counties could become the best and have a competitive advantage. It would take time and finances as well as some other resources. However the benefits could be substantial.

Water Management

1. Xeriscaping:

Both communities that were researched had implemented some sort of Xeriscape into their sustainability initiative for Water Management. Golden, Colorado has instituted a website where residents can go and get information about Xeriscape and the city has given its citizens a step by step process of what they can do to save water. Moscow Idaho performs irrigation audits for its residents and gives them tips of where they are able to save money. Part of the program is Xeriscaping. Instituting a Xeriscape concept into the four counties which have a high desert and arid climate would give residents options in landscaping and also save on costs of watering. Focusing efforts into the three main areas of green economy, as stated before, would be of more benefit to the four counties.

Land Management

1. Aesthetics

Research on Land Management practices is limited in the area of sustainability. One area of land management that could prove productive for the area would be

the beautification of city streets around businesses. This practice has shown to increase sales for the local businesses therefore increasing the economy in the area. Other than this lone practice, land management is not an area that the four counties should focus their funds on increasing its capabilities.

Personal Insights

Garin Rydalch:

Throughout studying a green economy for this project I've come to appreciate it a lot more. I wasn't knowledgeable at all about a green economy and what it entails. Doing this research has given me a better perspective of it. It was interesting to learn about renewable energy initiatives that other communities, cities, and countries have implemented or are trying to do. It was remarkable to see how the communities came together to start something, and then the local governments followed through with it. I thought the home energy audits was also a great place for starting something in a community, and thought that implementation of some sort of solar program in the area could be a great start here as well.

Aaron Kartchner:

There has been one resounding aspect I've learned from this project since the beginning. Green economies are not conducive to job creation. I didn't think they were from the onset, but my research has shown that to also be true. That might have something to do with the location for this research, being a small community. However, sustainable development is an area that is as much implemented on a personal level as it is a legislative level.

However, at the same time I have learned that there are initiatives that can be very helpful to everyone. Waste management is an area of sustainability I have taken for granted because I am from a green conscious area of the country in the Northwest. However, being able to see what waste management produces has surprised me. Knowing where the waste goes and how it is disposed of has fascinated me to learn. Knowing that it's not just going to a big heap of garbage has given me more respect for the enterprise.

Becky Weger:

This was extremely educational for me. I never took the time to look into green initiatives or sustainable economies. I knew they were focused on being good to the environment, but that was pretty much all I knew. I didn't know about the sectors or what each sector entailed. I feel much more educated on the subject of green initiatives. I feel confident carrying a conversation about sustainable economies. I am especially well-versed in the manners in which entities may become more green through alternative transportation.

I look forward to seeing how this will affect my life in the future. Seeing as I was not very aware of it, it will be very interesting to see how my life will change after researching into it with so much depth. I am anxious to see what lifestyle changes I will make as a result of my newfound knowledge. I am also excited to participate in conversations regarding becoming green.

Erin Fisher:

I have learned that recycling is a universal waste solution and that it is scalable. Profit can be made, most communities are receptive to it when presented with the truth behind its economic, environmental, and sustainable benefits. It does take reminders and education, however when worked on at a community, grass roots level, recycling sticks. I have also learned that there are productive means for trash once recyclable goods are removed from the waste. I had always viewed it as an end product before the research. This waste however can be turned into sellable goods like compost, energy, heat, and cement. The benefit of this is the creation of a loop that continues to supply itself, reduces costs, and sustainably uses materials and protects the environment.

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APPENDIX

(Best Practices Tables)