ADEQ Arizona Department of Environmental Quality

# RESOURCE SUMMARY

## Pollution Prevention (P2) for Distribution Centers

### Why Reducing Waste in Distribution Centers Matters

Source reduction can occur at the distribution center prior to your products hitting the road. The median distribution center in EPA's EnergyStar Portfolio Manager[1] is approximately 110,000 square feet and operates sixty hours per week.

While distribution centers vary in size across the US, they play a significant part in energy use, greenhouse gas emissions, packaging waste and shipping efficiency. This informational resource summary will provide you with simple tips on reducing waste at your distribution center.

**Consider this!**

*Is your distribution center strategically located in a geographical location where all forms of shipping can be utilized?*

Re-evaluate the location(s) of your company's distribution or manufacturing center[2]! Consider investing in smaller distribution centers across the United States that can easily be connected with your largest distribution center to allow for effective shipping hubs.

### Maintenance and Repair at the Distribution Center

Emphasize the financial and environmental results of a preventative maintenance program for major systems and components at your distribution center.

- Improve operations and maintenance practices by regularly checking and maintaining equipment to ensure it's functioning efficiently.
- Perform monthly maintenance of heating[3] and cooling[4] equipment to guarantee efficient operation throughout the year.
- Regularly change or clean HVAC filters every month during peak cooling or heating season. Dirty filters cost more to use, overwork the equipment and result in lower indoor air quality.
- Make sure that areas in front of vents are clear of furniture and paper. As much as twenty percent more energy is required to distribute air if your vents are blocked.
- Clean the evaporator and condenser coils on heat pumps, air-conditioners, or chillers. Dirty coils inhibit heat transfer and keeping coils clean saves energy.
- Repair leaks and adjust pressure in compressed air systems. Repair steam trap leaks and replace malfunctioning steam traps.
- Repair damaged insulation and replace missing insulation with thicknesses calculated for the operating and ambient conditions of the mechanical system.

### Strategic Packing

- Strategic packing methods can reduce the overall costs associated with packaging materials, warehousing and transportation by ten percent or more, all while reducing greenhouse gas emissions.
- Maximize existing freight capacity by using box sizes that work for your shipment. Denser shipments translate into fewer trucks on the road. Consider using rectangular boxes as they use less material and are more likely to fit precisely on a pallet when compared to square boxes.
- Practice order consolidation by grouping product orders by destination or by customer to maximize the use of packing boxes and to make the supply of the product more efficient.

This resource summary was created by the Arizona Department of Environmental Quality's Pollution Prevention Program using funds from a P2 Grant provided by the U.S. Environmental Protection Agency.

# RESOURCE SUMMARY

## Save Energy by Benchmarking

Save Energy by joining EPA's Energy Star Portfolio Manager[5]. This tool can help you measure energy use in commercial buildings. In addition, you can determine how your building is performing against peer facilities nationwide.

## Are you using refrigeration in your distribution center?

If your distribution center includes a refrigeration system, see the following fact sheets developed by EPA's Green Chill Program to assist you in reducing pollution to the environment while saving money:

- *Prioritizing Leak Tightness During Commercial Refrigeration Equipment Installation*[6]
- *Maintenance for Leak Prevention Fact Sheet*[7]
- *Retrofits*[8]
- *Opportunities for Green Design: Commercial Refrigeration Technologies*

## Designing Efficient Buildings

Are you planning a distribution center?

Consider the following links to guide you in designing a sustainable building:

- Better Buildings[10], an initiative of the US Department of Energy (DOE), to find a solution by topic, building size and type, technology, location, sector and more.
- LEED Certification[11] through the US Green Building Council to assist you in designing a resource efficient building.

## A Case Study

***A Case Study in Sustainable Distribution Center Design***

A company that implemented photovoltaics, lighting systems and high performance HVAC (heating, ventilation and air conditioning) units saving over one million kWh of electricity and almost 900,000 therms of gas while producing 590,000 kWh of power annually.

**References**


[1]EPA's Energy Star Portfolio Manager. *Energy Use in Distribution Centers*: https://www.energystar.gov/sites/default/files/tools/DataTrends_Distribution_Center_20140128.pdf.

[2] Strategic Planning of Layout of the Distribution Center: An Approach for Fruits and Vegetables Hall: http://www.sciencedirect.com/science/article/pii/S1877042812044515.

SmartWay. *Intermodal Shipping - A Glance at Clean Freight Strategies: https://www.epa.gov/sites/production/files/2016-06/documents/420f16034.pdf.*

[3] Energy Star. *Air Distribution Systems:* https://www.energystar.gov/ia/business/EPA_BUM_CH8_AirDistSystems.pdf.

[4] EPA's WaterSense at Work. *6.3 Cooling Towers*: https://www.energystar.gov/sites/default/files/buildings/tools/EPA_BUM_CH9_HVAC.pdf.

[5] Energy Star. Buildings and Plants. *Learn about Benchmarking:* https://www.energystar.gov/buildings/about-us/how-can-we-help-you/benchmark-energy-use/benchmarking.

[6] EPA Green Chill. *Prioritizing Leak Tightness During Commercial Refrigeration Equipment Installation:* https://www.epa.gov/sites/production/files/2015-09/documents/gc_leaktightnesscommercialequipinstall_fact_sheet_20130912.pdf.

[7] EPA Green Chill. *Refrigerant Leak Prevention through Regular Maintenance: https://www.epa.gov/sites/production/files/2013-12/documents/gc_preventativemaintenance_20130913.pdf.*

[8] EPA Green Chill. *Prioritizing Leak Tightness during Commercial Refrigeration Retrofits:* https://www.epa.gov/sites/production/files/2015-09/documents/gc_leaktightnesscommercialretrofits_factsheet_20130912.pdf.

[9] EPA Green Chill. *Commercial Refrigeration Technologies: Opportunities and Best Practices for Green Design: https://www.epa.gov/sites/production/files/2015-02/documents/epa_greenchill_commercial_ref_technologies_factsheet_10_20_14.pdf.*

[10]US Department of Energy. *Better Buildings: https://betterbuildingssolutioncenter.energy.gov/.*

[11] US Green Building Council. *LEED Certification*: http://www.usgbc.org/LEED/.



This resource summary was created by the Arizona Department of Environmental Quality's Pollution Prevention Program using funds from a P2 Grant provided by the U.S. Environmental Protection Agency.