NORTH DAKOTA
DEPARTMENT *of* HEALTH

Green Building Committee
Action Plan

2010

Action (Person)	Date
Action Plan Sign-Off (Dave Glatt)	3/25/09
Action Plan Update (Christy Smith)	4/15/10
Action Plan Sign-Off (Dave Glatt)	4/30/10

Gold Seal Center, Environmental Training Center and East Laboratories Building Energy Conservation Action Plan

April 2010

Rationale: Nearly 4,100 buildings and manufacturing plants have earned the EPA's Energy Star through the end of 2007, with the addition of more than 1,400 in 2007 alone. They include about 1,500 office buildings, 1,300 supermarkets, 820 K-12 schools and 250 hotels. Also, more than 185 banks, financial centers, hospitals, courthouses, warehouses, dormitories, and - for the first time - big-box retail buildings earned the Energy Star. More than 35 manufacturing plants such as cement, auto assembly, corn refining, and - for the first time - petroleum refining are also being recognized.

In total, these award-winning commercial buildings and manufacturing plants have saved nearly $1.5 billion annually in lower energy bills and prevented carbon dioxide emissions equal to the emissions associated with electricity use of more than 1.5 million American homes for a year, relative to typical buildings. Commercial buildings that have earned the Energy Star use nearly 40 percent less energy than average buildings and emit 35 percent less carbon dioxide into the atmosphere, offering a significantly smaller carbon footprint. About 500 Energy Star buildings use 50 percent less energy than average buildings. Many of these buildings excel due to good energy management practices such as routine energy efficiency benchmarking.

Energy use in commercial buildings and manufacturing plants accounts for nearly half of the total U.S. greenhouse gas emissions and nearly 50 percent of energy consumption nationwide. For more than a decade, EPA has worked with businesses and organizations to reduce greenhouse gas emissions through strategic energy management practices. Today, there are Energy Star qualified facilities in every state across the country. To qualify for the Energy Star, a building or manufacturing plant must score in the top 25 percent using EPA's National Energy Performance Rating System.

Energy Star was introduced by EPA in 1992 as a voluntary, market-based partnership to reduce greenhouse gas emissions through energy efficiency. In 2006, Americans, with the help of Energy Star, saved about $14 billion on their energy bills and prevented greenhouse gas emissions equivalent to those from 25 million vehicles.

Objective: The objective of the Green Building Committee Action Plan is to provide direction to the Green Building Committee in implementing best management practices to reduce energy consumption, water consumption and solid waste production at the Gold Seal Center, the Environmental Training Center and the East Laboratories Building.

Background of Buildings

Gold Seal Center (GSC)

Physical Location: 918 East Divide Avenue, Bismarck, ND 58501.

Construction Date: 1982

Date NDDoH occupied: 2006

Function of Facility: Office Space

Number of Employees: Approximately 100

Building Size:	Lot Size:	49,650 sq. ft.
	Total Gross Floor Area:	40,025 sq. ft.
	Total Gross Usable Area:	27,997 sq. ft.

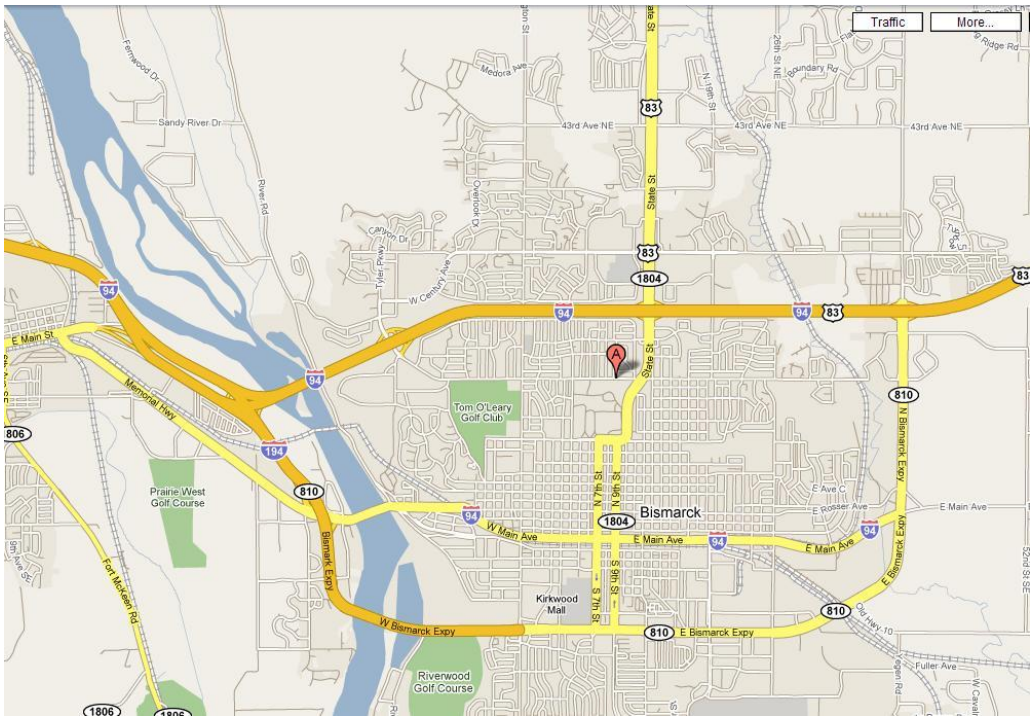
Building Exterior: Four stories, plus a basement and a mechanical penthouse. Features a high performance gold double pane insulating glass that provides environmental control and energy management benefits due to its ability to reduce solar heat gain and heat transfer by conduction. The gold-glint comes from a special coat of gold embedded by an electrostatic process on the inside of the outer panes.

The structure is composed of structural steel columns, beam construction, fireproofed with non-combustible material. The building exterior also features a built-up composition roof, and an automatic lawn sprinkler system.

Heating and Cooling: Hot water heating and cooling systems utilize a variable volume air system for energy savings and maximum flexibility in offices partition arrangement. The perimeter of the building and main floor have hot water heat. There is radiant ceiling heat in the second, third, and fourth floors. The entire building is humidity controlled. The HVAC system is computer-controlled by EnergyTech, Inc.

Utility Costs (2008):	Electrical:	$46,660/year
	Gas:	$16,115/year
	Water:	$2,620/year

Ownership: The Goal Seal Building is owned by J & L Development, IncBismarck, North Dakota. The North Dakota Department of Health leases the building from J & L Development, Inc.



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Environmental Training Center (ETC)

Physical Location: 2639 East Main Avenue, Bismarck, ND 58501

Construction Date: 1990-1991

Date NDDoH occupied: 1991

Function of Facility: The ETC building was constructed and occupied in 1991. The building serves several functions.

1. The building was originally built with EPA funds for operator training. The North Dakota Department of Health (NDDoH) now has complete control of the use of the building. The large 60 seat capacity training room now serves a variety of training and meeting needs for state agencies. The room can be split into two sections. The room contains state of the art projection and sound systems that can be used as a combined system or separately for each divided room.
2. The building has a lobby and reception area.
3. Four separate office areas are used to house eight workers. One area also serves as a mini-kitchen.
4. The building contains a lab area with lab tables, sinks and storage.
5. A large storage room is located on the east part of the building. It is used to store a variety of training material and equipment. For several years the storage room functioned as the temporary state morgue. Major changes to the ventilation system and additional lighting changes were made for the morgue. The ventilation system has not been changed back to the old system.
6. There are two restrooms (men and women).
7. The boiler is located in a small mechanical room next to the kitchen (the AC unit is outside). There is a second mechanical room off the storage room which has an air handler (the AC unit is outside). The second mechanical room handles the auditorium (AC only) and can supply air to the storage room (currently not used).
8. A separate unheated garage is used for storage of equipment (Water Quality boats and sample equipment).

Number of Employees: 8

Building Size: 5,944 square feet using outside dimensions from as built plans. (does not include unheated garage).

Utility Costs (2008):

Electrical:	$5,242/year
Gas:	$3,402/year
Water:	$442/year

Ownership: North Dakota Department of Health

Map: See LAB

East Laboratories Building (LAB)

Physical Location: 2635 East Main Avenue, Bismarck, ND 58501

Construction Date: 1976; Annex added 2004; Original building laboratory areas remodeled 2005 and laboratory HVAC replaced; Original building office areas remodeled 2009 and office HVAC replaced.

Date NDDoH occupied: 1976

Function of Facility: The East Laboratories Building houses the Division of Laboratory Services and the Division of Disease Control. The largest function of the building is as a laboratory for conducting tests on clinical, environmental, and regulatory samples. A separate cold storage building is used by Lab Services, Office of the Medical Examiner, Disease Control, and the Gold Seal Center.

Number of Employees: 50 - 100

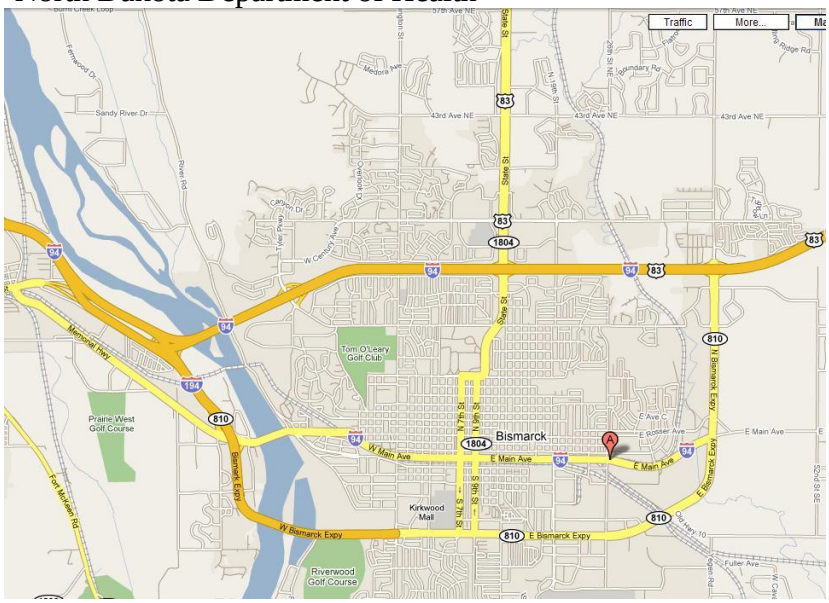
Building Size: 33,000 square feet using outside dimensions from as built plans.

Utility Costs (2008)*:

Electrical:	$139,171/year
Gas:	$66,044/year
Water:	$22,315/year

*****_The East Laboratories Building has observed a change in unit costs for Utilities over time and consumption so Utility Costs are not necessarily accurate from year to year. The HVAC systems have been replaced at different times so a full year of data impacted by the newest system (office areas) is not yet available._

Ownership: North Dakota Department of Health



Green Building Committee Members

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Proposed Actions

Energy Audit: The committee will select an energy audit company to perform energy audits of the three facilities. The findings of the energy audits will be used as further guidance for the committee in implementing energy conservation best management practices with approval from EHS Chief.

Timeline: Select Energy Audit Contractor by 8 March 2010
Energy Audit Performed by 6 August 2010

Areas of Improvement: The committee identified the following areas of improvement in energy conservation as starting points. Other areas of improvement may be added on an as needed basis.

Electricity/Energy Consumption
Water Consumption
Waste Reduction
Emissions/Air Quality/Transportation

Implementation: The committee will break into teams each responsible for one of the areas of improvement. The teams will develop a minimum of three improvement strategies for their area of responsibility. The teams will utilize suggestions from the energy audit report, the United States Green Building Council, the US EPA Energy Star for Building and Plants and other resources to determine improvement strategies that are well defined, measurable, and feasible and can be implemented in a reasonable amount of time.

Education: The committee will utilize the Green Apple Newsletter, brown bag lunches, and a Green Building Committee page on the NDDH Intranet website to disseminate information to employees of the Environmental Health Section. A variety of articles will be published in the Green Apple Newsletter, which will highlight the improvements being made in each building, the results of those improvements, and how employees can conserve energy at home. Longer articles or items of importance will be mentioned in the newsletter and placed on the Intranet for employees to review. Each bi-monthly Apple Core Gazette Newsletter also features a new Pollution Prevention Tip.

In addition to utilizing the newsletter, direct e-mail to employees from the Green Building Committee and through joint projects with other committees, such as the Employee Wellness Committee, will also be utilized as a venue for education and feedback.

Review of Action Plan: The action plan will be reviewed at least annually by all members of the committee. During the review each team will discuss their current improvement strategies and report on the successes, additional needs and outcomes. The teams may also suggest new improvement strategies that they would like to implement for the next review period.

Action Plan Implementation

Area of Improvement: Electricity/Energy Consumption

PROJECT 1:

Location: Gold Seal Center

Improvement strategy: Replace 34 watt fluorescent bulbs and ballasts with newer energy efficient 28 watt bulbs and electronic ballasts.

Current practice:

GSC: Using 32 watt T8 bulbs (all areas?)

Improvements:

GSC: Replace with 28 watt T8 bulbs. Need to get owner approval. More information on the monthly electric costs is needed to determine actual savings. Estimate each bulb would save $12 over the life of the bulb at $0.10 KWH and usage of 2,000 hours per year

Timeline: Estimate 3 to 6 years. Bulbs would be replaced as they wear out.

Measurable Results: Reduction in monthly electrical costs. Probable reduction in AC costs during summer.

Persons Responsible: Dana Mount, Christy Smith

References:

- http://www.gelighting.com/na/business_lighting/education_resources/literature_library/sell_sheets/downloads/fluorescent/28342_ultra_f28_linear.pdf

Current Status:

PROJECT 2:

Location: Environmental Training Center

Improvement strategy: Replace 34 watt fluorescent bulbs and ballasts with newer energy efficient 28 watt bulbs and electronic ballasts.

Current practice:

ETC: Using 34 watt T12 bulbs and original ballasts. Estimate about 250 bulbs

Improvements:

ETC: Replace with 28 watt T8 bulbs and ballasts. More information on the monthly electric costs is needed to determine actual savings. See attached spreadsheet and references.

Timeline: Estimate 3 to 6 months from time contractor is given approval for change at ETC.

Measurable Results: Reduction in monthly electrical costs. Probable reduction in AC costs during summer.

Persons Responsible: Robert Markhouse, Christy Smith

References:

- Jan 24, 2008 letter from Frontier Electric
- http://www.gelighting.com/na/business_lighting/education_resources/literature_library/sell_sheets/downloads/fluorescent/28342_ultra_f28_linear.pdf

Current Status: About a dozen light fixtures have been changed to new electronic ballasts and 28 watt bulbs. The fixtures are replaced as needed.

	Cost (whole project) T12 32 watt bulbs		Cost for each individual area 32 watt bulbs	Recycling cost for each area	Cost for each area with recycling and 32 watt bulbs	Cost for each area with recycling and 28 watt bulbs
Offices	$ 880		$ 942	$ 196	$ 1,137	$ 1,251
Storage & Mech Room	$ 486		$ 520	$ 60	$ 580	$ 642
Lobby	$ 1,030		$ 1,102	$ 268	$ 1,370	$ 1,503
Training room	$ 1,540		$ 1,648	$ 599	$ 2,247	$ 2,446
Lab	$ 595		$ 637	$ 89	$ 726	$ 803
Subtotal	$ 4,531		$ 4,848	NA	NA	NA
Recycling (lamps and ballast)	$ 1,980					
Subtotal with 32 watt bulbs	$ 6,511					
Use 28 watt GE bulbs Savings is 13% in electric costs. Will also see a reduction in AC costs.	$ 585					
Total with 28 watt bulbs	$ 7,096					
Note: Cost of retrofitting certain areas 7% higher. 7% savings if whole project is done at once.						
Note 2: The ETC has a mixture of bulb types 48" straight and U shaped bulbs. Some fixtures have two sets of lights operated by two switches.						
Note 3: Advance ballasts and Sylvania 32 watt bulbs which have a 5 year warranty on ballasts. Lamps are rated for 20,000 hours.						

PROJECT 3:

Location: East Laboratories Building.

Improvement strategy: Replace 34 watt fluorescent bulbs with energy efficient 28 watt bulbs.

Current practice:

LAB: Using 32 watt T8 bulbs (in all areas?)

Improvements:

LAB: Replace with 28 watt T8 bulbs. More information on the monthly electric costs is needed to determine actual savings. Estimate each bulb would save $12 over the life of the bulb at $0.10 KWH and usage of 2,000 hours per year

Timeline: Estimate 3 to 6 years to replace bulbs as they wear out.

Measurable Results: Reduction in monthly electrical costs. Probable reduction in AC costs during summer.

Persons Responsible: Cindy Auen, Christy Smith,

References:

- http://www.gelighting.com/na/business_lighting/education_resources/literature_library/sell_sheets/downloads/fluorescent/28342_ultra_f28_linear.pdf

Current Status:

PROJECT 4:

Location: NDDH Facilities

Improvement strategy: Lower the temperature or install timers on the hot water heaters

Current practice:

GSC: Temp set at **140º F**& last date drained: **8 mo (replaced)**
ETC: Temp set at **lowest setting** & last date drained: **7-8 years ago**
LAB: Temp set at **131º F** & last date drained: **____**

Improvements:

GSC: Lowered temp to 120 & drained, a plan to drain has been scheduled
ETC: Temp kept on **lowest setting** & drained a plan to drain has been scheduled
LAB: Lowered temp to _____ and a plan to drain has been scheduled

Each hot water heater should be drained completely (or until liquid draining out is clear) the first time to remove most of the sediment, and 2 gallons twice a year after that.

Timeline: 1-2 weeks, plus 30 minutes / water heater 2 x a year, to remove sediment and improve the efficiency of the water heaters.

Measurable Results: Instant - Results can be measured in next month's utility bill.

Should be between 3-5 %/heater if they can be lowered 10 deg F. 120 deg F is an acceptable temperature.

Persons Responsible: Robert Markhouse, Dana Mount, Christy Smith,

Current Status: In Progress: 1-2 weeks, and 1 hour/hot water heater in future years.

References:

- http://www.gelighting.com/na/business_lighting/education_resources/literature_library/sell_sheets/downloads/fluorescent/28342_ultra_f28_linear.pdf

Current Status:

PROJECT 5:

Location: NDDH Facilities

Improvement strategy: Install Smart Strips at work stations to reduce energy usage by having space heaters, desk lamps, monitors, etc., turn off when the computer is logged out.

Current practice:

GSC: No Smart Strips are in place
ETC: No Smart Strips are in place
LAB: No Smart Strips are in place

Improvements:

GSC:
ETC:
LAB:

Each Smart Strip costs approximately $30.

Timeline:

Measurable Results: Instant - Results can be measured in next month's utility bill.

By using a simple computer script (see below) combined with the Smart Strip Power Strip in a standard office environment where the computers are left on 24/7, the computer would shut off at the end of the day or if it is not used for 1 hour (user/administer programable). Then, the computer and its peripherals would be on only 9 hours, 5 days a week. This results in a 73% power savings* on the power used by the office computer system. http://www.smarthomeusa.com/ShopByManufacturer/Bits-Ltd./Item/LCG5

Persons Responsible: Bob Markhouse, Christy Smith

References:

Current Status:

PROJECT 6:

Location: NDDH Facilities

Improvement strategy: Determine appropriate methods for greening computer stations, based upon conversations with the appropriate IT manager. Then educate using e-mail, newsletters, the Intranet site, and / or posters.

Current practice:

GSC: Some computer stations are left on, some are turned off.
ETC: Some computer stations are left on, some are turned off.
LAB: Some computer stations are left on, some are turned off; some must be left on all of the time.

Improvements:

GSC:
ETC:
LAB:

Timeline:

Measurable Results: Instant - Results can be measured in next month's utility bill.

Persons Responsible:

References:

Current Status:

PROJECT 7:

Location: City of Grand Forks

Improvement strategy: Provide technical assistance to The City of Grand Forks, in conjunction with multiple partners, which is working on developing a 200,000 sq. ft. regional health and wellness facility. The Soil Conservation District and the State NRCS were asked to develop a Green Awareness for the exterior portion of the building and landscape on 42 acres of donated land. The facility will be "THE model" for what a green building program can be. The facility expects approximately 10,000 visitors per week.

Current practice: The facility will include: USDA Nutrition Lab, Obesity study, Physical therapy, Food court, Tennis courts, Fitness center, Arts, Senior center, Therapy for returning military personnel.

Improvements: Accessible by public transportation (bus, and reduced cab fare); EERC – wind turbine might be allowed as one of two possibly approved in the city. Current project ideas:

Green roof system
Community gardens
Community orchard (also used for food by the local homeless shelter)
Filtration barriers / sediment ponds for parking lot runoff
Wetlands, which double as a natural skating rink in winter
Spoils from wetland creation will be used to build an outdoor amphitheater
Walking trails
Composting area
Butterfly gardens
Geothermal building techniques

Timeline: Kick-off meeting on 11 February 2010; break ground in the Spring of 2010, begin building in August of 2010. Progress: Visit www.gfimagine.org

Measurable Results: Attendance in planning meetings, progress meetings, technical assistance offered, and funding leads offered to the project.

Persons Responsible: Cindy Auen, Lisa Elijah, John Gabriel, Bob Markhouse, Dana Mount, Nick Phillips, Ted Poppke, Christy Smith, Larry Thelen, Steve Tillotson

References:

Current Status: Send project ideas, technical advice, pitfalls, lessons-learned, or funding suggestions / leads.

Action Plan Implementation

Area of Improvement: Water Consumption

PROJECT 1:

Location: NDDH Facilities

Improvement strategy: Work with the ND Rural Water Systems Association and with Midwest Assistance Program for water and wastewater treatment efficiency.

Determine if the committee can assist with education & outreach to operators; address the efficacy of pumps; promote Best Management Practices; etc.

Current practice:

Information and resources are available from the ND Rural Water Systems Association
Information and resources are available from the American Water Works Association
Winter 2010 Water Systems EXPO & Conference
Fall 2010 NDDH Conference

Improvements:

NDDH Human Resources:

Timeline:

Measurable Results: Determine if outreach increases knowledge and implementation of more energy-efficient equipment.

Persons Responsible: Cindy Auen, Bob Markhouse, Nick Phillips, Christy Smith

References:

Current Status: Ongoing.

Action Plan Implementation

Area of Improvement: Waste Reduction

PROJECT 1:

Location: NDDH Facilities

Improvement strategy: Decrease the amount of waste production by reducing, reusing and recycling where possible.

Current practice:

GSC: Recycles cardboard, aluminum and paper. There are containers for aluminum and paper on floors 1 through 4, but none in the basement office area. Cardboard is collected in a container in back of the building.

ETC: Recycles paper, aluminum, cardboard and plastics.

LAB: Recycles cardboard, paper, plastic, aluminum and packing materials. Encourage employees to bring their plastic waste from home as ALL plastics are recycled through the program unlike the city's 1and 2 only plastics.

Improvements:

GSC: Expand recycling program to include containers in the basement office area and add containers for plastics. Assess possibilities of reducing and/or reusing materials in a cost effective manner.

ETC: Combine recycling efforts with the Lab. Assess possibilities of reducing and/or reusing materials in a cost effective manner.

LAB: Combine recycling efforts with the ETC. Assess possibilities of reducing and/or reusing materials in a cost effective manner

All Buildings: Incorporate a program of education and awareness among staff and visitors through promoting and encouraging waste reduction, reuse and recycling strategies. This could be done with signs, posters, emails, and newsletters. Tips for practicing waste reduction could include things such as double sided printing, reusing papers etc.

Timeline: by December of 2011

Measurable Results: The amount of waste generated should be visible. The amount of waste reserved for the recycle centers should be measureable

Persons Responsible: Cindy Auen, Christy Smith, Steve Tillotson

References:

Current Status: Ongoing

Due to recycling efforts at the East Laboratories Facility, general waste pickup has gone from twice/week to once/week for a cost savings of approximately $3000/year.

Due to waste reduction in one method about 1300 glass vials were not disposed of but reused.

PROJECT 2:

Location: NDDH Facilities

Improvement strategy: Add Environmental Awareness to North Dakota Department of Health policy and annual policy review.

Current practice:

No environmental clause is currently included in performance standards or in a policy statement.

Improvements:
Draft language:
Environmental Awareness – Employees are expected to improve their environmental awareness and practices to better enable them to conserve energy, maintain resources, and reduce waste whenever possible, and recycle what waste must be generated. Employees should be mindful of the environment and maintain a high level of environmental thoughtfulness in all of their work activities and assignments.

General Guidelines to accompany the policy:

Timeline:

Measurable Results: Determine if recycling increases after implementation of new language; electronic survey of employees; Yes/No of implementation of language is also measurable.

Persons Responsible: Cindy Auen, John Gabriel, Bob Markhouse, Dana Mount, Nick Phillips, Christy Smith, Larry Thelen, Steve Tillotson

References:

Current Status: Policy language drafted in meeting on 2/1/10. General guidelines are in development. Policy and guidelines will be submitted to NDDH-EHS Chief for review. Upon adoption by the NDDH-EHS, the committee will ask the NDDH-EHS Chief to propose the policy to other section chiefs, and/or the committee will submit the policy and guidelines to Arvy Smith.

Action Plan Implementation

Area of Improvement: Emissions/Air Quality/Transportation

PROJECT 1:

Location: LAB, ETC

Improvement strategy: Use landscaping as a method to reduce emissions, decrease heating/cooling expenses, and decrease lawn care expenses and chemicals used. Monitor opportunities with road construction projects to provide an environmentally friendly walking path for state employees in a safe environment.

Current practice:

Landscaping involves green grass with trees and lilac bushes circling outside the parking lot from the north, around the west, to the south side of the laboratory. There are limited trees or bushes on the east side of the laboratory. The ETC has limited tree cover and trees line the road on the south side of the ETC.

Employees of the laboratory and the ETC currently walk on the road leading to the penitentiary, which has no shoulder, or the shoulders of 26th Ave or Railroad Ave. Additionally, some employees drive to a walking path during breaks and lunches.

Improvements:

- Designate an area for examples of prairie grasses and wild flowers using the Capitol as an example, eventually attaining a Natural Area designation by the North Dakota Parks and Recreation Department.
- Evaluate the most useful places and types of trees to plant around the East Labs and ETC to increase shading and reduce exposure to winds.
- If future road improvement activities are proposed along East Main Avenue, the Committee will work with other stakeholders to discuss the possibility of incorporating a walking path using environmentally friendly materials for a safer, cleaner environment for employees to walk. This would help to reduce emissions by encouraging employees to stay on the campus for breaks and lunches to walk and improve safety as there are no accessible sidewalks nearby.

Timeline: Natural Area: 3-5 years
Tree Planting: 2-4 years
Walking Path: 5-10 years

Measurable Results:

Lawn Care - reduction in cost and frequency of weeding/fertilizing and reduction in water used for lawn care of green grass.
Heating/Cooling - reduced expense for heating and cooling.

Persons Responsible:

References:

Current Status: Future

PROJECT 2:

Location: NDDH Facilities

Improvement strategy: Transition to increased energy efficiency vehicles for Environmental Health Section work vehicles.

Current practice: EHS has 6 vehicles permanently assigned by Fleet Services.

- Water Quality has 2 2003 Chevy 4x4 Suburban's and 1 2006 Ford 4x4 Explorer
- Air Quality has 1 2003 Chevy 4x4 Suburban and 1 2006 Ford 4x4 Explorer
- Waste Management has 1 2000 Chevy 4x4 Blazer.

The 3 Suburban's and the Blazer are to be replaced by new 4x4 vehicles this spring as they are getting high miles. The new vehicles will be similar vehicles, 4x4 and 4 doors with trailer towing capabilities.

All other EHS staff check out vehicles through Fleet Services as needed.

Improvements:

Timeline: 5 years

Measurable Results:

Fuel:

Payments:

Persons Responsible: Lisa Elijah, Christy Smith

References:

Current Status: Ongoing. Currently researching use for vehicles, types of vehicles used, methods of payment, departments using vehicles; fuel used, and gas mileage.

PROJECT 3:

Location: NDDH Facilities

Improvement strategy: Evaluate improvements possible for improving indoor air quality in the Gold Seal Center, Environmental Training Center, and East Laboratories Building.

Current practice: The results of any previous indoor air quality testing performed in any of the three buildings are currently unknown.

Improvements: Mark Dihle from the Division of Air Quality in the Environmental Section will perform a walk through of the three buildings and recommend improvements.

Possible sources of indoor contamination that will be evaluated are: relative humidity, temperature and ventilation, and radon. From these finding, additional testing or consultation can be arranged.

GSC:
ETC:
LAB:

Timeline: 1 year

Measurable Results:

Persons Responsible: Lisa Elijah, Christy Smith

References:

Current Status: We are currently in the planning phase, gathering information.