

ESKILSTUNA: DESIGNING A TRANSPORT SYSTEM BASED ON NATURE'S PRINCIPLES

The City of Eskilstuna is changing its entire transportation approach to one based upon the eco-cyclic principles of nature. The City is concurrently re-evaluating its approaches to traffic, land use, public transportation, emissions control, bicycle travel, noise abatement, business development, fueling, and municipal vehicles. To accomplish this, Eskilstuna is using the four sustainability principles from the Natural Step framework, as a policy guide. The city is developing approaches to the issues listed above to bring them into harmony with these principles. In using a principle-guided approach, Eskilstuna is working to assure that land use, business development policies, public transit, and municipal transportation policies all operate as a system whose parts will all work together toward reduction of fossil fuel use for mobility needs.

Picture of Existing Conditions

A first step in the program's development was to obtain a clear picture of Eskilstuna's current transportation and environmental situations, in particular, what city policies and actions were violating these eco-cyclic principles. The city learned that the total motor vehicle distance traveled within its boundaries was 3,800 miles per person per year. Total distance traveled in and out of the city center was 3,000 miles per person per year. Every day, there were 100,000 car, train, bicycle, bus, and walking trips to and from the city center. The city found that its stream of out-commuters was equivalent to the stream of in-commuters — about 10 percent in each case. One positive finding was that train travel in and out of the city had increased from 6 percent to over 25 percent between 1993 and 1998. Eskilstuna found that its carbon dioxide emissions from transportation sources were about equal to the national average in Sweden, but about 50 percent higher than that of a rival city also working to reduce emissions levels. One astonishing study finding estimated that vehicle traffic in Eskilstuna was wearing off about 15 tons of asphalt from roads on an average winter day and 100 tons of particles were wearing off the tires of privately owned cars. The city also learned that it dispensed 550 tons of road salt during the winter months of a given year.

Six Target Areas

Following its inventory of traffic and environmental conditions, Eskilstuna decided to concentrate on six areas of transportation policy. First, a community planning initiative is examining the relationship between land use and traffic generation. Other efforts are in the works to make the city more bicycle-friendly and to improve its public transportation. Other target areas include environmental adaptations for vehicles, improved traffic management, business and industry transport practices, and mobility management, that is, reducing needs for private vehicle trips in the first place.

The city then set specific goals, implementing actions, timetables, and indicators to measure progress within each of these six target areas. For example, mobility management actions include initiating carpools, running bike-to-work campaigns, and providing consultations to businesses about ways to make their transport practices more environmentally friendly. Another action was to improve the safety for children's walk-to-school routes to reduce the necessity for parents to drive them to school. Another city strategy is re-examining conventional public works policies for road improvements, since it became clear to the city that transportation "improvements" such as bypasses, road straightening, and road widening tilts people's trip choice toward driving and away from

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available public transit or bicycling. Eskilstuna can choose to invest resources into increasing the availability and desirability of public transit and other mobility alternatives to driving a privately owned car.

Eskilstuna's investigation revealed the importance of maintaining local stores and markets in residential neighborhoods to reduce trip generation. If householders are able to obtain food and convenience items by taking a short walk, they can reduce car trips by 200 to 1200 percent, studies found. The city also found that car trips of less than three miles accounted for few of the total miles driven in the city; however, these short trips produced proportionately more emissions than longer trips. According to study findings, this was because catalytic converters that reduce car emissions operate less effectively when they are cold. This finding signaled to the city that its efforts to shift short trips from cars to bicycles would bring relatively high environmental gains in reduced emissions and improved air quality. Hence, the city has undertaken a systematic effort to encourage bicycling that includes expanding the present 60-mile network of bike trails, improving bicycle-riding safety, and designing traffic flows in the city center to give bicycles priority over vehicle traffic.

In efforts to improve public transportation, Eskilstuna is redesigning transit routes to increase their frequency and create more stops on those routes. Complementing these public transit improvements are corresponding restrictions on car traffic to help tilt trip decisions toward alternatives to driving a privately owned car. Eskilstuna is also working with neighboring municipalities to improve regional public transit opportunities, for example, creating additional train stops within the region and marketing efforts to increase regional transit ridership.

At the same time, Eskilstuna is working to adapt its municipal fleet of fossil-fueled buses, trucks, and cars to run on more environmentally friendly fuels such as ethanol or blended fuel mixtures. The city has begun to investigate biogas generation — gas created from organic waste — as a possible fuel source for city vehicles. Driver education courses will include eco-driving techniques that reduce fuel consumption, discussed in the next section.

To reduce truck trips, the city is helping private businesses find ways to increase truck load capacity, coordinate trips among different distributors, create more flexible pick-up and drop-off schedules, and arrange more convenient storage and terminal locations. To avoid empty truck return trips after deliveries, the city is discussing with businesses the possibility for "green returns"; after delivering their goods, trucks then pick up and return materials for recycling. To cut down on municipal delivery trips, Eskilstuna is working to improve coordination in its own public purchasing. The city is also helping businesses explore ways to decrease employee trips, using its own municipal employee trip reduction incentive program as a model.

Coordinating Group

To make sure this broadbased program is implemented, Eskilstuna has organized a coordinating group of both policy-makers and implementers. These include elected officials and representatives from municipal departments, such as building, traffic, public works, environmental, and planning. The transportation project is a long-term one, setting specific emissions reduction targets in five-year increments to 2025. By then, the city aims to reduce carbon dioxide emissions 75 percent below its level in 2001.

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Systems Approach

Eskilstuna's multilateral approach to changing its transportation system recognizes how trip choice is intertwined with availability of feasible, convenient, and affordable alternatives to driving a private, fossil-fueled vehicle. Eskilstuna is demonstrating how looking at transportation and mobility from a holistic systems perspective can create a more sustainable transportation policy.