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EMERGENCY GASOLINE PLAN



IOWA ENERGY POLICY COUNCIL GASOLINE EMERGENCY PLAN FOR IOWA -

A Compendium of Measures under Consideration by the EPC Staff

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## INTRODUCTION

On November 5, 1979, President Carter signed the Emergency Energy Conservation Act (EECA) into law. EECA provides for new authority to implement mandatory energy conservation measures during emergencies. Title II of the Act gives the President authority to establish monthly energy conservation targets for the states individually and for the nation as a whole upon finding that a severe energy supply interruption exists or is imminent. The state conservation target for any energy source is to be equal to the state base period consumption reduced by a uniform national percentage.

The Governor of each state is then required to submit a state emergency conservation plan to the Secretary of Energy within 45 days after target publication. This state plan may include either voluntary or mandatory conservation measures. The Secretary of Energy then has 30 days to review the state plan.

If the state fails to achieve the conservation target, the President may institute a federal program of conservation measures in that state. The President must find that at least an 8 per cent shortage exists before any federal measures are imposed, however. If no state plan is submitted, a federal plan may be imposed, regardless of the level of shortage.

Prior to the enactment of this federal mandate for a state emergency conservation plan, the EPC had already taken steps to develop Iowa's plan. In February, 1979, EPC staffers began putting together a preliminary draft plan, according to the State mandate for such a plan in Chapter 93.8 of the Iowa Code. That draft included 16 proposed voluntary conservation measures and 25 proposed mandatory measures for all energy sources.

The EPC subsequently contracted with the Iowa State University Engineering Research Institute to assess the energy-savings impact of each proposed conservation measure. That study has been completed and has been reviewed by the EPC staff. It was determined that additional work was necessary to complete the assessment of the proposed measures. Thus, an inter-agency task force of nine state agencies has been assembled to complete the state plan.

This Task Force has concentrated its initial efforts on the development of an emergency gasoline conservation plan. This was made necessary by the action taken by the Department of Energy to establish gasoline conservation targets for each state. The DOE has published interim voluntary gasoline targets for Iowa and is prepared to release the final version of the voluntary targets in the very near future. The DOE has asked each state to submit a gasoline conservation plan as soon as possible.

Attached is a list of some 52 voluntary and mandatory gasoline conservation measures which have been assessed for possible social, energy, and economic impacts. The measures have been divided into 9 separate categories, according to the type of savings proposed. 85 per cent of Iowa's gasoline is consumed on the highway, 15 per cent on the farm. Of the 85 per cent

highway usage, 9 per cent is burned by light trucks, 23 per cent for family business, 28 per cent by commuters, 18 per cent for social and recreational purposes, and 7 per cent for civic, religious, and educational activities. These proposed measures touch all of the categories of use in an effort to cut out the waste, reduce inefficiencies, and curtail demand when necessary. The Task Force submits these draft proposals to the Council for review.

The Task Force also recommends that:

1. As a number of the voluntary proposals appear to be appropriate as long-term gasoline saving measures, they should be implemented regardless of the level of shortfall;
2. No mandatory measures should be imposed unless a real supply shortage is evident. To do otherwise would severely strain the credibility of government and would result in minimal savings of gasoline. If a federal conservation target is imposed in the absence of an evident shortage, and voluntary measures do not result in compliance with the target, the Task Force recommends that the EPC allow the Federal government to impose mandatory measures on the State rather than having the State change its plan to include mandatory measures.
3. The most effective gasoline conservation measures are market-price forces. If the savings potentials of all the proposed mandatory demand restraint measures are summed, a savings of less than 20 per cent of the State's gasoline could be achieved. It is likely that many of these measures would be offsetting and that the actual savings could be closer to 10 per cent. A 10 per cent savings, at a time when our nation imports 45 per cent of its petroleum, is obviously insufficient.

In addition, the proposed mandatory conservation measures would inflict economic and social costs which might outweigh their energy savings benefits. Many of these proposals would take months to implement at a time when immediate demand reduction is required.

It is therefore the opinion of the Task Force that free market or taxation measures should be used if at all possible in the place of demand reduction or allocation measures. Free market or taxation proposals affect all markets by raising the cost of using fuel, but still allow each user to choose the amount of fuel to purchase and to allocate resources in the most efficient way possible.

In an unconstrained market (where the price will rise or fall to the level which will bring supply and demand into balance) and in the case of an application of a fuel tax designed to balance supply and demand, a degree of inequity will be imposed on persons with fixed or limited incomes who may have few, if any, alternatives to the use of that fuel. The adverse effects upon such persons can be serious and unacceptable. Under such circumstances, actions should be taken to mitigate such adverse impacts through direct financial assistance.

Decontrol of gasoline prices or a state-imposed gasoline surtax are two methods of letting the prices clear the market. Decontrol is not subject to state jurisdiction. A state surtax would require legislative approval. However, given the positive overall economic value of a surtax, with offsetting tax reductions, it certainly deserves serious consideration.

Lastly, the Task Force requests public and Council comment on assessments. In particular, comment is requested on the:

1. Appropriateness (in terms of social and economic costs) of the proposed measures;
2. Reasonableness of the economic, social, and energy assessments;
3. Need to add additional measures to the list of those being assessed; and,
4. Assessment of the possible offsetting energy savings potential of packages of the proposed measures.

The Task Force urges the Council to submit these measures to the public for informal public comment in March. An effort to approve an emergency gasoline conservation package should then be made at the Council's April meeting.



## FUEL EFFICIENCY OF VEHICLES

The following measures deal with increasing the fuel efficiency of the vehicle fleet:

1. Public information on vehicle modifications, maintenance, driving techniques and purchases (Iowa DOT and EPC comparison) - the Task Force agreed these measures, aimed at keeping the public maximally informed of ways to increase fuel efficiency, should be considered for implementation even if no targets are set. Although much of the information is already available, more effort could be made promote it. None of the measures would require legislation; compliance for the public would be voluntary. This measure is included in the Standby Federal Emergency Energy Conservation Plan; however, State involvement and expense under its provisions would be considerable.
2. Vehicle efficiency inspections - (Iowa DOT and EPC comparison) An informal opinion by the Attorney General's office suggests this measure would require legislation. Because of the lengthy period between implementation and realized savings, this measure may not be appropriate for severe immediate shortages and may be only marginally effective for targets anticipated to be in effect less than a year.
3. Speed limit compliance (Iowa DOT and EPC comparison) - this measure already has mechanisms in place; no further legislation would be necessary. Included in the Standby Federal Plan.
4. Speed limit reduction (Iowa DOT) - An informal opinion by the Attorney General's office suggests this measure would require legislation. As indicated by the DOT, may not be met with widespread acceptance unless an actual shortage exists. Also included in the Standby Federal Energy Emergency Conservation Plan.

## CONSERVATION POTENTIAL

Using EPC estimates for the first three categories and a speed limit reduction to 50 mph on all routes as a feasible action from the fourth category, total savings for this measure could potentially be 8 - 10% of total yearly gasoline consumption. Savings from the first two categories of measures, however, would not be realized immediately.



VOLUNTARY

2

LEVEL: la

ACTION: Public Information on Vehicle Purchase

DESCRIPTION: The purpose of this action would be to identify fuel saving characteristics of efficient automobile.

CONSERVATION POTENTIAL: According to the New York study, this could conserve 1%-5% of the transportation usage, depending on the degree of individual adoption.

GENERAL COMMENTS: This action would not show an immediate reduction in consumption.

VOLUNTARY

3a

LEVEL: lb&c

ACTION: Public information on the improvement of personal vehicle performance through driving techniques and vehicle maintenance.

DESCRIPTION: The purpose of this action would be to provide informational programs.

CONSERVATION POTENTIAL: ISU - Vehicle maintenance could possibly reduce consumption 2.5%.  
Iowa DOT - A careful driver may get 20% more miles per gallon in urban driving than the average driver.

IMPLEMENTATION TIME: Implementation time would be moderate involving several weeks to put the information together.

IMPLEMENTATION COST: The implementation cost of this action would be low to moderate since public service announcements may be used in many cases.

ECONOMIC IMPACT: The additional individual expense for vehicle maintenance may be offset by less fuel consumption.

OTHER IMPACTS:

**ACTION:** Public Information on Vehicle Modification, Maintenance, and Purchases

**DESCRIPTION:** Information on increasing the fuel efficiency of vehicles and on buying the most fuel efficient vehicle for an owner's needs would be disseminated through retail stations. Sources for already printed brochures, such as DOT, AAA, etc., should be contacted to provide most of the literature.

**CONSERVATION POTENTIAL:** For the first part, increasing the fuel efficiency, assume an average of 3% improvement in MPG can be realized, 50% of cars on the road could be affected, and that 20% of those owners make improvements. Savings would be 0.2% of total gasoline consumption. For the second part, purchasing more fuel efficient vehicles, assume a 15% turnover in the car market each year, (on a 1:1 ratio), and that average MPG improvement is 20%. Savings would be 2.25% (also assumes MPG lost as vehicles wear on is negligible)  
Total Savings for measure - 2.45%

**IMPLEMENTATION TIME:** Assimilation, Printing, Distribution, and Publicity of brochures - 60 days. Time for savings to be realized - at least six months later.

**IMPLEMENTATION COSTS:** Printing and Publicity, also perhaps one state employee to coordinate activity. Approximately \$500,000?

**ENFORCEMENT:** Would consist primarily of making sure retail outlets keep the material available. Publicity should include a number for citizens to call if a retail station does not have the literature available.

**ECONOMIC IMPACT:** Would probably increase business for those concerns servicing vehicles.

**OTHER IMPACTS:** --

**EPC Comments** - an effort to implement this measure should be made as a general service to the motoring public. Savings will continue to diminish as asymptotic value for maximum vehicle fleet efficiency is approached. As an aside, much of this information is already available, public impact seems to be minimal. Making the information even more accessible may not have any influence on the on-going behavior.

**ACTION:** Public Information on Driving Techniques to Increase MPG

**DESCRIPTION:** Through the system described under "Public Information on Vehicle Maintenance, Modification, and Purchases", information on driving techniques to increase MPG would be disseminated.

**CONSERVATION POTENTIAL:** Assume 20% savings possible, 50% of drivers need to improve their driving techniques, and 10% do. Savings possible - .75%

**IMPLEMENTATION TIME:** (see cited measure)

**IMPLEMENTATION COSTS:** (see cited measure)

**ENFORCEMENT:** (see cited measure)

**ECONOMIC IMPACT:** Savings would result in decreased energy costs for the individual and thus more money to spend/save.

**OTHER IMPACTS:** --

**EPC Comments -** (see cited measure)



LEVEL 1d

4

ACTION: VEHICLE SPOT EMISSION CHECKS

DESCRIPTION: The state would perform spot emission checks to determine engine condition.

CONSERVATION POTENTIAL: Possibly 1 - 3 percent depending on condition of vehicles and extensiveness of program.

IMPLEMENTATION TIME: 6 months - 2 years

DIRECT COSTS: Initial Cost: Typical investigative unit would cost \$3,000 - \$4,000 (only evaluate emission standards).

Continuing Cost: Require large commitment of enforcement personnel.

ENFORCEMENT: Extensive sampling program to insure compliance with program.

ECONOMIC IMPACT: Private: Additional cost of vehicle operation.

OTHER IMPACTS:

MANDATORY

LEVEL 1c

ACTION: VEHICLE EFFICIENCY INSPECTIONS

DESCRIPTION: Require all vehicles to be in compliance with recommended manufacturers' specifications on an annual basis or when vehicle ownership is transferred.

CONSERVATION POTENTIAL: (assuming 100% compliance)

Iowa State University - 2.5%  
New York State - 2.0%  
Massachusetts Institute of Technology - Significant effect on reducing consumption, but effectiveness of program is unknown.  
Iowa DOT - anticipated savings for the annual inspection program would be lower than 2.5%; if inspection was performed when vehicle was transferred the anticipated energy savings would be negligible.

IMPLEMENTATION TIME: 6 months to 1 year

DIRECT COST: Initial Cost: The government cost would be similar to the provision of public notice and implementation of safety inspection program. The private individual will experience a high personal cost to comply with vehicle inspection.

Continuing Cost: The cost to government would be to certify and monitor inspection stations and require increased enforcement personnel and related costs.

ENFORCEMENT: The enforcement involved would be to maintain a uniform evaluation of inspection items.

ECONOMIC IMPACT: Private: This would involve additional cost of owning and operating an automobile, which may or may not be off set by increased vehicle efficiency.

Business: The economic impact on business will not increase profit from the actual inspection, but will increase additional activity in working on non-complying vehicles.

OTHER IMPACTS: Vehicle efficiency inspections would encourage fuel savings rather than restricting travel and have no impact on mobility. Highly complementary with other conservation measures.

**ACTION: Vehicle Inspections**

**DESCRIPTION:** Cars would be relicensed only after a yearly inspection. The vehicle owner, along with his remittance for his license, would also submit a statement certifying the car had been inspected and tuned to a designated level of efficiency.

**CONSERVATION POTENTIAL:** assuming an average 6% savings, and that 50% of cars are not properly tuned, reduce that by 50% as cars should be tuned every six months -- savings potential, 1.1%

**IMPLEMENTATION TIME:** Would be effective only around licensing time, if system were not operational before November 1980, would have no effect on 1981 gasoline consumption.

**IMPLEMENTATION COSTS:** Vehicle inspection stations would have to be certified, exact specifications as to areas to be checked and required repairs would have to be drawn up for various sizes and years, and based on these, costs to the car owner would have to be determined.

**ENFORCEMENT:** Licenses would not be issued unless the required minimum work had been done.

**ECONOMIC IMPACT:** Could be prohibitively expensive for low-income people.

**OTHER IMPACTS:** Because of Iowa's mass licensing system, all cars would have to be inspected within a period of 2 - 3 months, causing an over-load on service stations (certified vehicle inspection stations)

**EPC Comments -** Although admirable in intent, Iowa's licensing system makes this measure unfeasible.

MANDATORY

5a

LEVEL 1a

ACTION: SPEED LIMIT COMPLIANCE

DESCRIPTION: Stepped up enforcement to increase compliance with 55 mph speed limit. Current average speed on Iowa's rural primary road is 57 mph with 35% compliance (Oct., Nov., Dec., 1979).

CONSERVATION POTENTIAL: (assuming 100% compliance)

Iowa State University	- 1.7%
Illinois	- 1.0%
New York State	- 1.0%
Massachusetts Institute of Technology	- 2.0%
Iowa DOT	- 1.0%

*all motor vehicles on highways only*

IMPLEMENTATION TIME: No time requirement

DIRECT COST:

Initial Cost: The cost to government would be minor since enforcement mechanisms already exist.

Continuing Cost: The cost to government is dependent upon the expected compliance. The additional cost required to achieve 100% compliance is unknown. However, some of the cost associated with increased enforcement would include: additional personnel, fuel consumption, equipment and associated judicial costs.

ENFORCEMENT: The maximum level of compliance through enforcement may be quite low without widespread public acceptance.

ECONOMIC IMPACT:

Individual: Compliance with the speed limit would reduce fuel costs.

Business: Strict enforcement of 55 mph represents a 4% reduction in the current average speed. Even though this will increase costs due to longer travel times, these costs are not included since they were not in compliance with the current legal speed limit.

OTHER IMPACTS: There would be no appreciable loss in mobility. There are favorable safety benefits involved. Moderately complementary with other conservation measures.

NOTE: Due to greatly stepped up speed limit enforcement (including a 400% increase in speeding tickets) on Iowa's highways beginning in December, the average speed on rural primary roads has dropped to about 56 mph according to preliminary January data. It appears, then, that some of the potential fuel savings from speed limit compliance may already have been realized.



**ACTION:** Strict Enforcement of 55 mph Speed Limit

**DESCRIPTION:** Enforcement of 55 mph speed limit would be stepped up on most highly travelled interstates and highways in Iowa (as determined by the DOT) to a level of compliance, 70% as goal

**CONSERVATION POTENTIAL:** By MIT study, total compliance would result in savings of 3%. Due to the nature of Iowa travel (dispersed among many roads) 40% compliance may be highest level possible. Savings at this level - 1.2%

**IMPLEMENTATION TIME** - minimal

**IMPLEMENTATION COSTS** - would use existing forces

**ENFORCEMENT:** present mechanism

**ECONOMIC IMPACT:** possible increased revenue to the state from increased speeding fines.

**OTHER IMPACTS:** if enforcement officers are directed to concentrate their efforts on enforcing the speed limit, vigilance in other areas would decrease proportionately. If, to remedy the situation, more officers were added to the force, time and costs for implementation would rise exorbitantly.

**EPC Comments** - not all vehicles operate at greater efficiency at 55 than at higher vehicles, particularly trucks and vehicles with large engines. However, setting different limits for different vehicles would result in an "administrative nightmare"; hence this profile is recommended.

MANDATORY

LEVEL 1b

ACTION: SPEED LIMIT REDUCTION

DESCRIPTION: Lower speed limits to:

- OPTION I: 50 mph on all routes except Interstate (55 mph)
- OPTION II: 50 mph on all routes
- OPTION III: 45 mph on all routes except Interstate (55 mph)
- OPTION IV: 45 mph on all routes

CONSERVATION POTENTIAL: (assuming 100 percent compliance)

*if starting 50% 70% ~~75%~~*

Iowa State University	2%	(OPTION II)
Illinois	2%	(OPTION II)
New York State	3-4%	(OPTION II)
Massachusetts Institute of Technology	4%	(OPTION II)
Iowa DOT	2.6%	(OPTION I)
"	3.5%	(OPTION II)
"	4.0%	(OPTION III)
"	5.7%	(OPTION IV)

IMPLEMENTATION TIME: The time required to implement this measure would be about 60 days.

DIRECT COST:

Initial Cost: The government cost would be to change all speed limit signs (approximately \$100,000 for Interstate and Primary routes).

Continuing Cost: The cost to government is dependent upon the expected compliance. The additional cost required to achieve 100% compliance is unknown. However, some of the cost associated with increased enforcement would include: additional personnel, fuel consumption, equipment and associated judicial costs.

ENFORCEMENT: The maximum level of compliance through enforcement may be quite low without widespread public acceptance.

ECONOMIC IMPACT:

Consumer: Compliance with the speed limit reduction would reduce fuel costs. Compliance would also increase intercity travel times.

Business: Compliance would reduce productivity of the highway transportation system. A speed reduction of 55 mph to 50 mph represents a 10% increase in travel time or 6 additional minutes per hour of travel. Forty-five mph represents a 19% increase or 13 minutes lost per hour of travel.

OTHER IMPACTS: There would be no major loss in mobility. There would be some increase in safety benefits. Some diversion of intercity passengers from automobiles to airplanes would occur. This measure is moderately complementary with other conservation measures.

*might show some diversion to rail*

## PUBLIC APPEALS TO SAVE GASOLINE

The following public appeal measures are perhaps the most attractive. They allow maximal choice, have little costs attached, and save Iowans energy expenses. However, the effectiveness depends on the public's perception of the situation, and savings will most likely decrease as time wears on. Evaluations from the Iowa DOT and an EPC comparison are presented.

### CONSERVATION POTENTIAL

Savings potentials from public appeal measures are difficult to assess. If an appeal to conserve is made in response to a conservation target issued when adequate supply is available, a 2 - 3% reduction in total gasoline consumption may be ambitious. If, however, there is evidence of supply shortages, an 8% reduction could possibly be realized. (An 8% reduction would be approximately 10% of total transportational consumption of gasoline).

VOLUNTARY

- 8 -

LEVEL: 2a

ACTION: Public Appeal to Save a Gallon of Fuel Per Week.

DESCRIPTION: The purpose of this action would be to encourage the public to conserve fuel.

CONSERVATION POTENTIAL: According to an ISU study there is a possibility of saving up to 5%, depending on the degree of adoption.

IMPLEMENTATION TIME: Implementation time for this action would be fairly short.

IMPLEMENTATION COST: The implementation cost would be minimal.

ECONOMIC IMPACTS: The economic impacts would be relatively minor.

OTHER IMPACTS:



VOLUNTARY

-9-

LEVEL: 2b

ACTION: Public Appeal to Drive 10 miles less per week.

DESCRIPTION: The purpose of this action would be to encourage the public to reduce their driving.

CONSERVATION POTENTIAL: According to an ISU study, the conservation potential could be as high as 3.7%, depending on the degree of adoption.

IMPLEMENTATION TIME: The implementation time for this action would be fairly short.

IMPLEMENTATION COST: The implementation cost for this action would be minimal.

ENFORCEMENT:

ECONOMIC IMPACT: The economic impact of this action would be relatively minor.

OTHER IMPACTS:

VOLUNTARY

LEVEL: 2c

-10-

ACTION: Public Appeal For Trip Consolidation

DESCRIPTION: Encourage the public to consolidate their automobile trips.

CONSERVATION POTENTIAL: The IIR states that this action would conserve less than 1%; whereas the NYS reveals that it would conserve 2%-4%.

VOLUNTARY

- 11 -

LEVEL: 2d

ACTION: PUBLIC APPEAL FOR RIDESHARING

DESCRIPTION: The purpose of this action would be to encourage vanpool and carpool programs

CONSERVATION POTENTIAL: According to IIR and NYS the conservation potential for this action would be less than 1%.

IMPLEMENTATION TIME: Implementation time for this action would be fairly short.

IMPLEMENTATION COST: Implementation cost for this action would vary as to location and type of ridesharing.

ENFORCEMENT:

ECONOMIC IMPACT: The economic impacts of this action would be a great personal savings to the automobile owner.

OTHER IMPACTS:

ACTION: Public Appeal for (target)% Reduction

DESCRIPTION: The Governor of Iowa would appeal to Iowans to reduce consumption by (target)% and explain why and how the target imposed. The appeal would also contain an indication as to the effects of noncompliance.

CONSERVATION POTENTIAL: Assume 10% target is set, 30% compliance is realized, saving possible - 2.25%

IMPLEMENTATION TIME: immediate, as would be savings realized

IMPLEMENTATION COSTS: none

ENFORCEMENT: none, possible feedback on a monthly basis from DOT as vehicle miles travelled.

ECONOMIC IMPACT: reduced energy costs to the individual, making available money to spend/save

OTHER IMPACTS: none

EPC Comments - actual savings realized will depend on the nature of situation. If actual shortage exists, savings could be greater. If however, abundant supplies are available, less savings will probably be realized. In either case, savings will drop off substantially as time goes on and public enthusiasm wanes.

## REDUCING QUEUING AT RETAIL OUTLETS

-13-

The following measures are designed to reduce queuing at retail gasoline outlets when a shortage is perceived by the motoring public.

1. Flag system (Iowa DOT and EPC comparison) - if made mandatory, an informal opinion from the Attorney General's office indicates legislation may be necessary. The measure's purpose is informational in nature.
2. Fuel availability hotline (Iowa DOT and EPC comparison) - the Attorney General's office has indicated that this measure is probably allowed under State law. Again, the measure is informational and could lessen a shortage's impact on travel-related industries.
3. Minimum purchase requirements (Iowa DOT and EPC comparison) - currently allowed under State law is the preliminary opinion from the Attorney General's office. This measure is included in the Standby Federal Plan, may be effective in reducing tank-topping, perhaps more so than -
4. Odd/even sales (Iowa DOT and EPC comparison) - as above, is probably allowed under State law and is included in the Standby Federal Plan. Its effectiveness in reducing queuing or tank-topping is questionable.

## CONSERVATION POTENTIAL

These measures are primarily aimed at managing a shortage. Some savings may be realized by reducing idling in lines or reducing gasoline wasted looking for open outlets, however, such savings would probably not amount to more than a fraction of a per cent.

VOLUNTARY

-14a.

LEVEL: 3a

ACTION: FLAG SYSTEM AT GASOLINE STATIONS

DESCRIPTION: The purpose of this action is to coordinate the reduction of hours at retail outlets and utilize a standardized flag system to indicate availability of fuel by type.

CONSERVATION POTENTIAL: This action would be more of a service than a conservation measure.

IMPLEMENTATION TIME: According to a New York Study the implementation time for this type of action would be approximately 2 months.

IMPLEMENTATION COST: The implementation cost for this action would be minimal, consisting of 3 flags per station.

ENFORCEMENT: Enforcement would consist of the state encouraging retailers to coordinate their hours, and pressure from their gas station dealers association.

ECONOMIC IMPACT: The economic impact of this action would involve reduction in operating costs of stations, and it would spread out gas allocations throughout the month.

OTHER IMPACTS: Other impacts involve a great effort on the part of the dealer, and as a result of this action, the consumer. Would be more certain about where and when gas is available, so less gas is wasted looking for gas.

ACTION: Flag System

DESCRIPTION: Retail stations would be required to indicate when: open, by hanging a green; open for service but not selling gasoline, by hanging a yellow flag; closed by hanging a red flag.

CONSERVATION POTENTIAL: Minimal, possible some resulting from vehicle owners not needing to drive around to find an open station.

IMPLEMENTATION TIME: Immediate

IMPLEMENTATION COSTS: --

ENFORCEMENT: Stations either not hanging a flag or servicing differently than the flag indicates (i.e. station with a yellow flag pumping gas) will be subject to a fine. City police and state patrol will periodically check stations as part of their patrol.

ECONOMIC IMPACT: None

OTHER IMPACTS: Less time spent searching for open service stations.

EPC Comments - Not actually a conservation measure, its implementation would be most effective in times of supply disruptions when the availability of gas through retail outlets is uncertain.

VOLUNTARY

-15a-

LEVEL: 3b

ACTION: FUEL AVAILABILITY HOTLINE

DESCRIPTION: The purpose of this action is to set up state and local telephone lines to inform motorists of gas availability.

CONSERVATION POTENTIAL: There would be no effect on consumption demand as a result of this action.

IMPLEMENTATION TIME: This type of action could be implemented immediately.

IMPLEMENTATION COST: The implementation cost of this action would be small to moderate.

ENFORCEMENT:

ECONOMIC IMPACTS: None

OTHER IMPACTS: This action could possibly increase or decrease travel, depending on the supply. Another impact would be that many private agencies are involved in this activity.



**ACTION:** Information Hot-Line

**DESCRIPTION:** A toll-free number would be established providing information regarding the availability of gasoline through retail outlets in the state.

**IMPLEMENTATION TIME:** Given that personnel exist that could be used to implement this measure, 2 - 3 weeks.

**IMPLEMENTATION COSTS:** Costs for a toll-free incoming line with sufficient personnel to manage, plus computer capabilities to keep information on the 4,000 retail outlets in Iowa current, \$75,000 - \$100,000

**ENFORCEMENT:** Stations would not be required to inform the state as to their hours of operation, however, it would be in their best interest to do so.

**CONSERVATION POTENTIAL:** Minimal, possibly some from eliminating time spent searching for open stations.

**ECONOMIC IMPACT:** Would be a potential boon to businesses catering to travellers, as availability of gasoline would be easily accessed.

**OTHER IMPACTS:** Should ease tension caused by uncertainty of gasoline availability.

**EPC Comments -** An emergency management measure costs for personnel and work load can only be assessed by implementation.

MANDATORY

-16a-

LEVEL 2a

ACTION: MINIMUM PURCHASE REQUIREMENTS

DESCRIPTION: Restriction of gasoline purchase to a specific dollar or gallon amount.

CONSERVATION POTENTIAL:

Massachusetts Institute of Technology - Does not reduce consumption demand.

Iowa DOT - No reduction in demand.

IMPLEMENTATION TIME: Less than one month.

COST: Initial Cost: The government cost of this action would be minor consisting of public notice and informational materials. Occasionally will increase cost of individual purchase.

Continuing Cost: There are no additional costs anticipated.

ENFORCEMENT: Enforcement of this action would require the retail level to restrict sales even if supplies are adequate.

ECONOMIC IMPACT: Private:  
Business: This action may increase cost of operation by extending hours to sell their allocations.

OTHER IMPACTS: This action may cause people to drive for the purpose of getting their tanks half empty so they can fill up for a longer trip.

Reduction in queuing time at retail gasoline stations.

Negligible impact; neither complements nor conflicts with other conservation measures.

**ACTION: Minimum Purchase Requirements**

**DESCRIPTION:** Owners of vehicles with 4 - 6 cylinder engines would be required to purchase at least \$5.00 worth of gasoline at each pumping. Owners of 8-cylinder engine vehicles would be required to purchase at least \$7.00 worth of gasoline at each pumping.

**CONSERVATION POTENTIAL:** some savings from cars not idling in lines at service stations, minimal

**IMPLEMENTATION TIME:** Immediate

**IMPLEMENTATION COSTS:** --

**ENFORCEMENT:** City police would have the authority to ticket vehicle owners or station operators making transactions for gasoline purchases below the above mentioned levels.

**ECONOMIC IMPACT:** --

**OTHER IMPACTS:** Would reduce lines at service stations during times of supply shortages.

**EPC Comment -** while not significantly reducing gasoline consumption, this measure has proven effective in reducing lines at retail outlets spurred on by vehicle owners maintaining full tanks during times when supplies are tighter than normal.

MANDATORY

LEVEL 2b

-17a-

ACTION: ODD-EVEN SALES (ON A HOUSEHOLD LEVEL)

DESCRIPTION: All automobiles, motorcycles and trucks under three (3) ton of one household would be allowed to purchase fuel only on odd days of the month if their license plate number ends in an odd number. Those with even numbers may purchase fuel only on even days.

CONSERVATION POTENTIAL:

New York State - 5%

Massachusetts Institute of Technology - Significant for shortages of minor duration.

Iowa DOT - Minor reduction in demand.

IMPLEMENTATION TIME: Major problem with verification of vehicles by household.

DIRECT COST:

ENFORCEMENT: Enforcement of this action would require the retail level to restrict sales even if supplies are adequate.

ECONOMIC IMPACT: Business: Trips on alternate days that require more than one tank of fuel will be curtailed.

OTHER IMPACTS: This action may reduce long-distance recreation and vacation travel.  
Conflict with other conservation measures.

MANDATORY

LEVEL 2b'

-17b-

ACTION: ODD-EVEN SALES (ON INDIVIDUAL VEHICLES)

DESCRIPTION: Owners of automobiles, motorcycles and trucks under three (3) ton would be allowed to purchase fuel only on odd days of the month if their license plate number ends in an odd number. Those with even numbers may purchase fuel only on even days. Sales could also be based on households.

CONSERVATION POTENTIAL:

Iowa DOT - No reduction in demand based on license plate.

IMPLEMENTATION TIME: 1 month

DIRECT COST: Initial Cost: The government cost for this action would be minor consisting of information and public notice.

Continuing Cost: There are no additional costs anticipated.

ENFORCEMENT: Enforcement of this action would require the retail level to restrict sales even if supplies are adequate.

ECONOMIC IMPACT: Business: Trips on alternate days that require more than one tank of fuel will be curtailed.

OTHER IMPACTS: This action may reduce long-distance recreation and vacation travel.

Conflict with other conservation measures.

**ACTION:** Odd/Even Sales Restrictions

**DESCRIPTIONS:** Passenger vehicles would be allowed to fill their tanks only on even days if their license plate's last number was an even number or odd days if their license plate's last number was an odd number. Exceptions for emergency vehicles and haulers would need to be made.

**CONSERVATION POTENTIAL;** Minimal ( reduced time idling in lines)

**IMPLEMENTATION TIME:** Immediate

**IMPLEMENTATION COSTS:** --

**ENFORCEMENT:** City police and highway patrol would ticket vehicle owners or station owners transacting business under any but the above prescribed conditions.

**ECONOMIC IMPACT:** Reduced time in lines.

**OTHER IMPACTS:** -

**EPC Comments-**;this measure would be implemented to reduce tank-topping. Its effectiveness is questionable; in cases of disruptions the minimum purchase measure is preferred.

REDUCE NUMBER OF SINGLE OCCUPANT VEHICLES USED TO COMMUTE

The next group of measures is aimed at reducing the number of single occupant vehicles used in commuting. The Attorney General's office has noted that State law is silent on these measures, and that legislation may be required if any are made mandatory. The Standby Federal Energy Emergency Conservation Plan contains an Employer-Based Commuter and Travel measure which would allow affected industries to choose three or four options to use in instituting the measure. The Iowa DOT has previously worked on promoting carpooling, vanpooling, and bus pass subsidies; DOT's representative indicated a greater emphasis should be placed on reducing consumption in work-related travel, which accounts for about twenty-eight per cent of all gasoline consumption.

The measures have been reviewed by the Iowa Development Commission, Iowa DOT, and EPC.

CONSERVATION POTENTIAL

If 10% of the work force switched from single occupant vehicles to higher occupancy modes of travel (such as carpooling), savings of 2 - 3% may be realized.

VOLUNTARY

LEVEL 3c

-19-

ACTION: CARPOOL MATCHING SERVICE

DESCRIPTION: The purpose of this service would be to establish an advisory service to make the public aware of employers and organizations participating in the program.

CONSERVATION POTENTIAL: According to an Iowa State study, this action could obtain a 4% reduction, depending upon the number of participants in this area.

IMPLEMENTATION TIME: To get the services operating it would take approximately 1-2 months.

IMPLEMENTATION COST: Implementaion cost for this action would be minimal.

ENFORCEMENT:

ECONOMIC IMPACT: The economic impact of this action would involve a great personal savings to the automobile owner.

OTHER IMPACTS:



VOLUNTARY

LEVEL 4b

-20

ACTION: EMPLOYER CARPOOL MATCHING SERVICE

DESCRIPTION: The purpose of this action is to encourage the employer to make carpool information available through bulletin boards or a computer matching service.

CONSERVATION POTENTIAL: According to an ISU study this action could result in a 4% reduction.

IMPLEMENTATION TIME: The implementation time of this action could be fast to moderate depending on the complexity of the program.

IMPLEMENTATION COST: The cost of implementing this action would be small to moderate depending on the methods which are used.

ENFORCEMENT:

ECONOMIC IMPACT: The economic impact of this action would be negligible.

OTHER IMPACTS:

VOLUNTARY

LEVEL

4e

-21-

ACTION: EMPLOYER PROVIDES VEHICLES AS AN ALTERNATIVE

DESCRIPTION: Employer provides vehicles for employees to commute in carpools. During work hours these vehicles are used for regular work travel.

CONSERVATION POTENTIAL: The potential conservation of this action is unknown.

IMPLEMENTATION TIME: Limited to the time needed to encourage employers to try this idea.

IMPLEMENTATION COST:

ENFORCEMENT:

ECONOMIC IMPACT: Employee: The employee would enjoy a moderate savings.

Employer: The employer would have increased costs.

OTHER IMPACTS: This action would help make carpooling more popular. It would also decrease the number of tardy employees and tend to increase employee satisfaction with the company. This action would be a very attractive company benefit.

MANDATORY

LEVEL 5c

ACTION: SPONSOR VANPOOL/CARPOOL PROGRAM

DESCRIPTION: Purchase vans for leasing to groups of employees at a minimum charge with fuel and maintenance charged to the employees in the pool.

CONSERVATION POTENTIAL:

- Iowa State University - 4%
- Illinois - 1%
- New York State - 3-5%

IMPLEMENTATION TIME: Varies on type of program

COST: Initial Cost: The initial cost would be fairly high consisting of van purchasing, administration costs, and publicizing the program.

Continuing Cost: The continuing costs would be minimal consisting of administration costs.

ENFORCEMENT: No additional enforcement is anticipated at this time.

ECONOMIC IMPACT: Employee: The employee could benefit by saving expenses for maintenance and fuel for a personal car, and may affect a decision not to buy a second car.

Employer: The employee could benefit by not having to provide additional parking space and it may improve employee attendance.

OTHER IMPACTS: This measure would be more effective in highly urbanized areas.

Vanpooling require a great deal of preparation and coordination.

Vanpooling allows mobility during a fuel crisis.

Negligible impacts; neither complements or conflicts with other transportation objectives.

VOLUNTARY

LEVEL 4c

-23-

ACTION: EMPLOYER BUS PASS PROGRAM

DESCRIPTION: Employer would subsidize transit passes for employees commuting to work.

CONSERVATION POTENTIAL: The conservation potential for this program is likely to be small and limited to the number of employees who have mass transit available for their use.

IMPLEMENTATION TIME: It should take very little time to implement this plan.

IMPLEMENTATION COST: The initial cost of this action would be moderate, limited to advertising and possibly rerouting of current mass transit to new areas.

ENFORCEMENT: Voluntary.

ECONOMIC IMPACT: Consumer: The employer would pass his costs onto the consumer.

OTHER IMPACTS: This action will increase ridership of current mass transit modes leading to possible improvements to this mode. The employer may enjoy fewer tardy employees.

MANDATORY

-24-

LEVEL 5d

ACTION: PREFERENTIAL PARKING FOR HIGH OCCUPANCY VEHICLES

DESCRIPTION: Give priority to car and vanpools in terms of close-in location and/or lower parking fee.

CONSERVATION POTENTIAL:

Illinois - 1%

IMPLEMENTATION TIME:

COST: Initial Cost: The initial cost would be minimum consisting of designating parking spaces.

Continuing Cost:

ENFORCEMENT: There may be legal problems involved in levying any type of fine for violators.

ECONOMIC IMPACT:

Employee:

Employer: Reduce land cost for parking space.

OTHER IMPACTS: Negligible impacts; neither complements or conflicts with other transportation objectives.

VOLUNTARY

LEVEL, 4d

-25-

ACTION: EMPLOYER PROVIDING PREFERENTIAL PARKING FOR HIGH OCCUPANCY VEHICLES

DESCRIPTION: Employer owned parking facilities would give priority to high occupancy vehicles. This priority could be in the form of a closer location or a reduced parking fee.

CONSERVATION POTENTIAL: There would probably be less than a 1% fuel savings from this action.

IMPLEMENTATION TIME: Implementation time would be limited to the amount of time necessary to advertise and encourage employers to try this idea.

IMPLEMENTATION COST: None (ongoing cost would be in terms of lost parking fees).

ENFORCEMENT:

ECONOMIC IMPACT: None.

OTHER IMPACTS: This action would encourage carpooling which is another conservation action.

MANDATORY

-26-

LEVEL 5b

ACTION: REDUCE PARKING SPACE

DESCRIPTION: The number of parking spaces would be reduced.

CONSERVATION POTENTIAL:

IMPLEMENTATION TIME: 10-30 days

COST: Initial Cost: The initial cost would be minimum, consisting of designating parking spaces.  
Continuing Cost: There are no continuing costs anticipated at this time.

ENFORCEMENT: There is a possibility of a legal problem in levying any type of fine for violators.

ECONOMIC IMPACT:

Employee:

Employer: less parking cost

OTHER IMPACTS: This measure may cause people to carpool.  
This measure may cause some working tension.  
Negligible impacts; neither complements or conflicts with other transportation objectives.

VOLUNTARY

LEVEL 4a

-27-

ACTION: EMPLOYEE ACTION - FLEXIBLE WORKING HOURS

DESCRIPTION: The purpose of this action is to allow employees to stagger working hours within a specified time period.

CONSERVATION POTENTIAL: According to llR the conservation potential of this action is negligible.

IMPLEMENTATION TIME: The implementation time involved would be fairly short.

IMPLEMENTATION COST: The implementation cost for this action would be small to moderate.

ENFORCEMENT:

ECONOMIC IMPACT: This action would increase the operating costs of the employer.

OTHER IMPACTS: This action would initiate a major reduction in peak hour congestion, creating an increased opportunity for ridesharing.



ACTION: Flex-time

DESCRIPTION: Employers would be encouraged to allow their employees to arrange their own starting/stopping times within a range set by the employer.

CONSERVATION POTENTIAL: reduced peak hour congestion; savings would probably be less than .1%; savings as a result of making carpooling/vanpooling more attractive is unknown.

IMPLEMENTATION TIME: Could be implemented immediately by companies willing to change.

IMPLEMENTATION COSTS: Minor promotional costs to the State.

ENFORCEMENT: None

ECONOMIC IMPACTS: None

OTHER IMPACTS: Carpooling/vanpooling would be more attractive; transit congestion during peak hours would be reduced.

EPC Comments - because of the measure's potential to increase carpooling/vanpooling, efforts to make flex-time more acceptable to the business community should be initiated (continued?)

**ACTION:** Employer-Based Plans to Reduce Employee Driving

**DESCRIPTION:** Encourage employers to disseminate information on ride-sharing, mass transit, vanpooling, or any other method to decrease single occupant cars by an information campaign aimed at the business's realization that such measures tend to increase employee attendance and raise the employee's esteem for the company. Such encouragement would desirably include some subsidy for such actions, such as reduced parking fares for carpool vehicles, the purchase of vans for vanpooling, etc.

**CONSERVATION POTENTIAL:** assume half of business related gasoline consumption is for commuting. Assume 10% effectiveness (10% fewer employees drive). Savings potential - 1.7%

**IMPLEMENTATION TIME:** Lengthy and varied, depending on the enthusiasm of the business community and the nature of the measure (the federal plan would require businesses of a certain size to implement three or four very specific measures, this type of detail may be suitable to the state plan also).

**IMPLEMENTATION COSTS:** Would be incurred for the most part by the business community. State would need to coordinate activities, monitor compliance, and provide organizational and technical expertise. Would require at least one state employee.

**ENFORCEMENT:** If the measure is only to encourage employers to assist employees in adopting alternative modes of transportation (besides single occupant cars), none would be applicable. If a measure similar to the one proposed in the federal plan were enacted, enforcement would consist of on-site audits to make sure three or four specific measures were being actively promoted. Fines to companies found not to be in compliance could be the purchase of a van for employees, subsidizing mass transit, etc.

**ECONOMIC IMPACT:** Cost to the company would to some extent be made up by higher employee attendance and higher morale. Employees participating would have reduced energy costs, thus more money to spend/save.

**OTHER IMPACTS:** less congestion during peak hours, less pollution.

**EPC Comments:** Due to the lengthy implementation time, the real possibility of a target being imposed, and the value of the measure even without a target, action should be taken to implement this measure under any condition.

PROPOSAL: EMPLOYER BASED PLAN

DOT ? - 286

A significant reduction in gasoline <sup>Assumption</sup> production can be met if we could provide a more efficient method of transporting people to and from work. All employers both private and non-private should be included. Any plan implemented should be designed so as to minimize cost to the employer.

Figures indicate that 40% of personal vehicle use in the U.S. is attributable to commuting and on the job travel.

The lowest vehicle occupancy rate occurs during the home to work hours commuting 1.4 persons per vehicle.

Considerations

1. Address the area where the greater percent of gasoline is consumed.
2. It could instill an energy conservation ethic which would out last an emergency situation.
3. Flexible - can be sensitive to an industries peculiar needs and circumstances.
4. Any legal impediments to such plans?

Negligent operation of vehicles?

Insurance? Workman's compensation?

\* This is an area for the Attorney General's office to investigate.

The Department of Transportation may want to communicate with the business and industrial leaders of the State regarding EBTP's.

from: Iowa Development Commission

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## MANDATORY DEMAND CURTAILMENT

The next measures are considerably more drastic than others presented. While the savings potential is perhaps greater than other measures', these actions are most restrictive, offer little choice, and may cause significant inconveniences and hardships. In the interest of maintaining public confidence in government, these measures may best be suited for implementation when severe shortages are apparent.

1. Prohibit single occupant vehicles (Iowa DOT and EPC comparison) - the Attorney General's office has indicated this action may be allowed under current State law; however, the incidences of avoiding compliance, the exceptions which would need to be provided for, and the increase in the courts' case loads may make this an unwieldy measure.
2. Carless days (Iowa DOT and EPC comparison) - this measure, while allowing considerably more choice than the above, may be difficult to enforce. If there is evidence of a shortage, however, public acceptance and compliance could be high, but will probably decrease as enthusiasm wanes. The Attorney General's office feels authority for this measure may be present under 93.8. Included in Federal Plan.
3. Four-day work week (Iowa DOT and EPC comparison) - As above, the Attorney General's office has indicated authority for this action may exist under 93.8. This measure is included in the Standby Federal Plan. While the potential exists for a twenty per cent reduction in commuter-related consumption, the increase in other driving may reduce the savings realized.
4. Retail store closings (Iowa DOT) - this measure has not yet been assessed by the Attorney General's office. Modifications of this action -- "blue laws" -- are in effect in various states; savings realized are not known.
5. Curtail selected public events (Iowa DOT) - as above, has not yet been assessed by the Attorney General's office; public resistance is expected to be high. Such a measure may be appropriate only under extreme shortage conditions.
6. Reduce number of drivers (Iowa DOT) - not yet assessed by Attorney General's office; may impose significant hardships on those affected.
7. Parking measures (Iowa DOT and EPC comparison) - these measures are designed to discourage parking in areas where higher occupancy modes of travel are available; some may be allowed under current State law.
8. Weekend Service Station closings (EPC)- may be permitted under 93.8, but could cause economic hardship for travel-related industry. Opposed by the Iowa Development Commission.

### CONSERVATION POTENTIAL

These measures interact substantially, savings if all of them were implemented would not be additive. For example, implementing carless days with four day work week, parking measures, or weekend service station closings would reduce the savings attributable to each individually. If all were implemented, a 15% reduction in consumption may be possible. (Savings would be slightly more than 20% if additive). Implementing these measures may negate savings realized with voluntary measures.

MANDATORY

LEVEL 3a

- 30a -

ACTION: PROHIBIT SINGLE OCCUPANT VEHICLES

DESCRIPTION: All vehicles occupied by one person would be banned from highways and major urban streets during specified hours of the day.

CONSERVATION POTENTIAL:

Iowa State University - 36% (1)  
Massachusetts Institute of Technology - 10%  
Iowa DOT - Potential savings is dependent on percent of vehicle time restricted to greater than one person per vehicle (assume restriction of 50% would result in a 10% reduction in fuel).

IMPLEMENTATION TIME:

1-2 months

DIRECT COST: Initial Cost: The government cost would be minor, consisting of public notice and information costs.  
Continuing Cost: This measure could place a substantial enforcement burden on urban police force. Major cost to administer exceptions.

ENFORCEMENT: The sheer number of vehicles involved in urban commuting traffic could make this measure difficult to enforce.

To avoid complying with this action individuals may travel over parallel routes or place manikins in the front seat of their vehicles.

ECONOMIC IMPACT:

Individual: No significant impact is expected although the impact on the consumer is greatly dependent upon location of household (rural vs. urban).

Business: This action may reduce highway travel by sales representatives.

May have an adverse impact on commercial urban parking facilities.

OTHER IMPACTS: May have major impact on households that have two or more employed with different work locations or hours.

Greater impact on people working for small firms than on people working for large companies.

Moderately complimentary with other conservation measures.

ACTION: Prohibit Single Occupant Cars

DESCRIPTION: Between the hours of 7:00a.m. and 9:00a.m., and 4:00p.m. and 6:00p.m., Monday through Friday, vehicles with only one occupant would be subject to ticketing for a misdemeanor with a fine but no points against a license. Motorists on their way to pick up fellow carpoolers would not be subject to ticketing; the decision as to whether to ticket the motorist and have the destination certified and charges dropped, or to let the motorist drive away with an explanation would be left up to the ticketing officer.

IMPLEMENTATION TIME: Immediate

IMPLEMENTATION COSTS: Substantial, would require stepped up patrolling by city police and highway patrol, would put a tremendous burden on (agency) judging the merit of the ticket.

CONSERVATION POTENTIAL: DOE estimates a 6% decrease in VMT for every .1 increase in vehicle occupancy (above the 1.3 average vehicle occupancy figure). Assume 30% of gasoline is consumed during the above hours, and that 40% compliance is achieved, savings potential - 3.8%

ENFORCEMENT: Through city police and highway patrol.

ECONOMIC IMPACT: Increased revenue as a result of fines levied.

OTHER IMPACTS: Inconvenience to motorists, particularly those stopped on their way to pick up a carpooling member.

EPC Comments - Due to the anticipated low public acceptance of this measure, it should only be implemented if actual supply disruptions are imminent.

MANDATORY

LEVEL 4a

-3/a-

ACTION: CARLESS DAY

DESCRIPTION: Owners of automobiles, motorcycles and trucks, three (3) ton and under, would apply to the county in which the vehicle is registered for a sticker. The sticker would designate on day of the week that the vehicle would not be driven. The owner of the vehicle could choose the day. Exemptions would be allowed for emergency vehicles.

CONSERVATION POTENTIAL:

Illinois	- 4-6%
New York State	- 5-7%
Massachusetts Institute of Technology	- 4-6%
Iowa DOT	- 3-5%

IMPLEMENTATION TIME: 2-3 months

DIRECT COST: Initial Cost: Paying fixed costs for a vehicle that cannot be used 15% of the year. Additional cost to government to issue and verify stickers.

Continuing Cost: This cost would be dependent upon expected compliance.

ENFORCEMENT: This action would involve additional responsibilities on the county level.

ECONOMIC IMPACT: Individual: Some areas are more auto dependent than others and alternate means of travel are not available to all commuters.

Business: Adverse impact on service oriented business.

OTHER IMPACTS: This could result in a strain on present transit capacity, and force transit dependent people off the system.

Conflict with other conservation measures.

**ACTION:** Carless Days Designated by Sticker, Chosen by Owner

**DESCRIPTION:** Owners of automobiles and trucks registered at three tons would apply to the County in which the vehicle is registered for a sticker to be placed on the vehicle. The sticker would designate one day of the week during which that vehicle could not be driven on any public road or street. The owner of the vehicle would choose which day it would be. Exemptions would be allowed for emergency vehicles and taxis. Measure may be worded to extend to a household rather than just a vehicle.

**CONSERVATION POTENTIAL:** Assume day chosen will be the day with the least driving (10% of total), 50% compliance. Savings possible - 3.4%

**IMPLEMENTATION TIME:** Assuming stickers are printed in advance, personnel at auto registration are available, 45 - 60 days.

**IMPLEMENTATION COSTS:** DOT estimate - 10¢/vehicle

**ENFORCEMENT:** Present mechanism

**OTHER IMPACTS:** Reduced driving may result in reduced activity for customer oriented businesses.

**EPC Comments:** As time goes on and the inconvenience becomes more apparent, vehicle owners will devise ways to circumvent the measure. Also, it will be difficult in advance to anticipate exemptions other than the ones mentioned and develop guidelines, personnel, etc., to deal with them.



MANDATORY

LEVEL 4c

- 32 -

ACTION: RETAIL STORE CLOSINGS

DESCRIPTION: Retail stores would reduce hours and/or close on weekends to encourage customers to shop on their way from work rather than make a separate trips to the store.

CONSERVATION POTENTIAL:

Massachusetts Institute of Technology - Data suggests under fuel shortage condition people voluntarily combine many trips.  
Iowa DOT - No independent study was made.

IMPLEMENTATION TIME: 1 month

DIRECT COST: Initial Cost: The initial cost of this action would entail advertising new store hours.

Continuing Cost: The continuing cost of this project would be minimal.

ENFORCEMENT:

ECONOMIC IMPACT: Individual: There are no impacts anticipated at this time.

Business: This may cause a reduction in retail store employee hours, and may reduce retail sales level.  
May increase catalog and shop-at-home services.

OTHER IMPACTS: With a reduction in store hours, it may encourage people to drive to work alone in order to shop on the way home.

Conflict with other conservation measures.

MANDATORY

LEVEL 4b

- 33a -

ACTION: Four-day work week

DESCRIPTION: Employees would work 10-hour days for four consecutive days.

CONSERVATION POTENTIAL:

New York State 1%-3%

Iowa DOT No independent analysis made.

IMPLEMENTATION TIME: 3-6 months.

DIRECT COST: Initial Cost: Minor adjustments in administration functions.  
Continuing Cost: None anticipated.

ENFORCEMENT: May be institutional problems with union/management acceptance.

ECONOMIC IMPACT: Individual: Decrease commuting costs.  
Employer: Reduce heating/cooling costs.

OTHER IMPACTS: Increase demand for weekend travel.  
Possible expanded day care costs.  
Mass transit schedules as well as support services would have to adjust to new operation time.  
Negligible impacts neither complements nor conflicts with other transportation objectives.

**ACTION:** Four Day Work Week

**DESCRIPTION:** Depending on the severity of the shortfall, businesses would either be encouraged or mandated to distribute their work load so that employees would work 4 10-hour days. If such a measure were mandated, applications for exemptions would be reviewed and decided upon by the Iowa Commerce Commission.

**CONSERVATION POTENTIAL:** assume 50% compliance, driving in other areas increase 10%, savings potential - 2.2%

**IMPLEMENTATION TIME:** Would depend on labor contracts, nature of work (whether or not services would have to be cut, new shifts arranged, etc.). 90 days minimum.

**IMPLEMENTATION COSTS:** To administer applications for exemptions and to monitor compliance would require personnel, printing, etc. Costs to the State - probably over \$100,000. Costs to the business - depends on the nature of the work.

**ENFORCEMENT:** On-site spot audits if made mandatory.

**ECONOMIC IMPACT:** Effect on worker productivity not known.

**OTHER IMPACTS:** Some services may have hours shortened, could possibly expand employment and revenue in leisure-related concerns.

**EPC Comments** - the critical component in this measure is the increase in other driving, at higher levels than the level assumed above could potentially result in negative savings (greater gasoline consumption).

MANDATORY

- 34 -

LEVEL 4d

ACTION: CURTAIN SELECTED PUBLIC EVENTS

DESCRIPTION: Possible activities include:  
a) Night athletic events;  
b) Adult education classes; and  
c) Reduce library hours.

CONSERVATION POTENTIAL:

IMPLEMENTATION TIME: Less than one month.

DIRECT

COST: Initial Cost: The initial costs of this measure are minor such as advertising.  
Continuing Cost: No additional costs are anticipated at this time.

ENFORCEMENT: Public dissatisfaction and high resistance.

ECONOMIC IMPACT: Individual: No economic impacts are anticipated at this time.  
Business: This action could hurt local establishments dependent on the events.

OTHER IMPACTS: Some social needs would be unmet, which may result in less socially acceptable or undesirable behavior to meet these needs.

MANDATORY

LEVEL 4e

- 35 -

ACTION: REDUCE NUMBER OF DRIVERS

DESCRIPTION: The number of automobile drivers would be reduced through 1) raising the minimum driving age to 18 years; 2) using the driving test to screen out persons as their reflexes and eyesight deteriorate with age; and 3) impose harsher rules for habitual offenders to lose their licenses and more difficult to get them back.

CONSERVATION POTENTIAL: Four percent of Iowa licensed drivers are under 18 (excluding special permits).

IMPLEMENTATION TIME: Would require changes in driver licensing laws.

DIRECT COST: Net cost would be minor as there would be a savings in not testing or issuing licenses to those under 18 years of age.

ENFORCEMENT: Existing mechanism for enforcement.

ECONOMIC IMPACT: Would make it difficult and sometimes impossible for effected persons to get to work where public transit or carpooling is not possible. Removing habitual offenders from the highways would reduce insurance costs.

OTHER IMPACTS: Improvement in highway safety.

MANDATORY

LEVEL 3b

- 36 -

ACTION: PARKING CONTROLS

DESCRIPTION: Several options could be implemented:

- 1) Increase parking fees/time of day rates;
- 2) Establish auto-free zones in CBD area; and
- 3) Restrict new parking construction.

CONSERVATION POTENTIAL: Unknown.

IMPLEMENTATION TIME: Increase parking costs--1-2 months.  
Establish auto-free zones & restrict new parking--6-12 months.

DIRECT COST: Initial Cost: The government cost of this action would be encountered in sign changes and public notice. Major increase in individual and business expenses.  
Continuing Cost: The cost to government would be minimal since the major enforcement mechanism already exists.

ENFORCEMENT: Likely to be unacceptable to commercial and fringe sectors of CBD.

ECONOMIC IMPACT: Individual: This action would result in an increase in shopping cost.  
Business: The central business districts may not survive this action due to shopping center parking advantages.

OTHER IMPACTS: This may result in businesses moving out of central business districts to allow greater access.

Conflict with other transportation objectives.

MANDATORY

LEVEL 5a

-37-

ACTION: CHARGE FOR PARKING

DESCRIPTION: A fee could be based on general, preferred or vanity category parking spaces with credit for number of passengers and vehicle efficiency.

CONSERVATION POTENTIAL:

IMPLEMENTATION TIME: 1-2 months

DIRECT COST: Initial Cost: The initial costs involved in this project would be minor, consisting of issuing and designating parking spaces.  
Continuing Cost: The continuing cost would include collection of fees through payroll deduction, and adjustment to parking assignments.

ENFORCEMENT: This could cause problems in imposing any type of fine for violators.

ECONOMIC IMPACT: Employee: For the employee this could increase the cost of the work trip.  
Employer: This measure could result in decreased production due to worker discontent.

OTHER IMPACTS: There could possibly be an increase in ridersharing as a result of this measure.

Union contracts may be a possible problem.

Negligible impacts; neither complements or conflicts with other transportation objectives.

**ACTION:** Prohibit Meter Parking

**DESCRIPTION:** Those parking spaces with metered parking would be changed to no parking areas.

**CONSERVATION POTENTIAL:** Assume traffic in these areas accounts for 10% of driving done for family business. Assume measure reduces driving to these areas by 50%, savings potential - 1.1%

**ECONOMIC IMPACT:** Businesses that are located near affected areas would lose business, as vehicle operators would most likely shift their patronage to those areas not affected. Transit to those areas would increase somewhat.

**OTHER IMPACTS:** Less congestion in these traditionally high traffic volume areas. Loss of revenue from meter collections and fines for violations.

**EPC Comments:** Any savings might be severely reduced if vehicle operators, instead of parking, merely left their engines idling while running errands.



ACTION: Increase Parking Fees

DESCRIPTION: Parking fees for lots not for employee use would be encouraged to raise their fees, thereby discouraging driving to areas which traditionally have adequate transit coverage available.

CONSERVATION POTENTIAL: Assume shopping in such high density areas accounts for 10% of driving done for family business, and that 10% of social/recreational activity occurs in high density areas. Assume measure reduces driving to these areas by 20%, savings potential - .8%

ENFORCEMENT: (agency) in charge of licensing lot owners would also monitor price.

IMPLEMENTATION TIME: Within 30 days

IMPLEMENTATION COSTS: --

ECONOMIC IMPACT: Those shoppers which still drive would have increased costs, if less shoppers drive and use transit alternatives, transit systems will have increased ridership during off-hours.

OTHER IMPACTS: Economic loss to lot owners from volume loss may be offset by price increase. Congestion would be reduced.

EPC Comment - State most probably does not have the authority to set prices for private concerns, this measure may not be very popular with lot owners.

ACTION: WEEKEND BAN ON RETAIL GASOLINE SALES

DESCRIPTION: The state would place a mandatory ban on weekend retail gasoline sales.

CONSERVATION POTENTIAL: Reduced weekend travel would result in a five percent reduction in fuel use.

IMPLEMENTATION TIME: 1 month

DIRECT COSTS: The cost to administer would be very low.

ENFORCEMENT:

ECONOMIC IMPACT: Business: Would be a real hardship on any business dependent upon weekend travel. The recreational business would be especially hard hit by such a ban (MIT).

OTHER IMPACTS: Those trips that could not be shifted to week days would be curtailed if they required more than one tank of gasoline. Disproportionate burden on persons who work weekends and those who cannot vacation during the week.

**ACTION:** Weekend Service Station Closings

**DESCRIPTION:** Service stations would be required to close either one day or both days of the weekend.

**CONSERVATION POTENTIAL:** Assume social and recreational travel would drop 20% if stations were closed one day, 40% if stations were closed both days of the weekend, savings potential - 3.4% and 6.9% respectively.

**IMPLEMENTATION TIME:** Immediate

**IMPLEMENTATION COSTS:** Monitoring compliance costs would probably be absorbed by the enforcement agency.

**ENFORCEMENT:** City police and highway patrols would be responsible for making sure stations were closed. Substantial fines would be assessed to station operators not complying with the measure.

**ECONOMIC IMPACT:** Leisure oriented businesses would be severely hurt by the unavailability of gasoline.

**OTHER IMPACTS:** Would probably result in long lines during the week.

**EPC Comments -** Because of the tremendous losses which would be felt by leisure oriented businesses, this measure should only be implemented as a means of managing a serious real shortage of product.

PROPOSAL: DEALING WITH TRAVEL

Our first assessment said that any considerations (restricting travel, closing gas stations, etc.) relative to energy use by travel and recreation must be made by keeping certain factors in mind. (Refer to first handout).

To answer some questions, travel away from home (100 miles or more) accounted for in 1978<sup>1</sup> (in U.S.):

1. 1.2 million barrels of petroleum per day
2. 6.3% of total petroleum used
3. 3.2% of total energy consumed

During 1974, travel away from home accounted for 7.0% of total petroleum used<sup>2</sup>.

Closing the gasoline stations on weekends, for instance, could possibly create an artificial demand (people hoarding gasoline, gas lines, wasting gas to find less crowded stations, etc.).

It could also effect travel of tourists to Iowa weekend vacation spots, thereby hindering the economic contributions the travel industry makes to the Iowa economy (jobs, revenues, fresh dollars, etc.).

Efforts to conserve gasoline should focus on the sectors which consume greater amounts of gasoline than travel and recreation (single car occupants to and from work). Equal efforts for energy conservation in all facets of life are necessary to conserve energy and lessen American's dependence on foreign oil.

<sup>1</sup> and <sup>2</sup> DOE Monthly Energy Review, March 1979  
U.S. Data Travel Calculations

*from: Iowa Development Commission*

## DEMAND CONSTRAINT WITH CHOICE

The next four measures allow a measure of choice in the reduction of gasoline demand.

1. Increased use of gasohol (Iowa Development Commission and EPC comparison) - the Attorney General's office finds State law silent on promoting the use of gasohol. Alcohol fuels are increasing in popularity world-wide; their potential for providing a stable market for Iowa crops and for reducing our dependence on imports are evident.
2. Encourage high density development (EPC) - May require legislation according to the Attorney General's office. This trend toward centralizing business is becoming popular in cities all over the U.S., and the renovation of the downtown area may indicate that such attitudes are already present in the business community.
3. State gas rationing - unless federally mandated, such an action would require legislation. Its implementation would be an "administrative night mare".
4. Gasoline surtax - Legislation would be required to impose a surtax on gasoline. The effectiveness of the measure, and the plusses of revenue available to reduce some economic hardship make this action attractive. Public resistance, however, would probably take some time to diminish.

## CONSERVATION POTENTIAL

The first two measures are particularly attractive in that they do not demand motorists substantially change travel patterns. Savings depend on the degree to which business pursues their implementation. Gasohol could contribute an extra 2% to total gasoline supplies if it increases to 20% of the market. With extensive promotion, high density development could conceivably contribute to more than a 20% reduction in gasoline consumption over the next ten years. For both these measures, savings would be realized only on a very long-term basis.

Rationing and the surtax have, theoretically, an almost unlimited potential for gasoline demand reduction. However, both would probably cause changes in motorists travel patterns. Availability of gasoline would not be a limiting factor directly; the price of that gasoline, an indirect measure of its availability, would force motorists to choose between energy expenditures or other expenditures.

PROPOSAL: GASOHOL

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ing on when an energy emergency situation arises, Gasohol  
e a short term measure. Although alcohol production is not vol-  
uminous enough to carry us through a crisis tomorrow, such a situa-  
tion could possibly reduce some of the barriers to large scale produc-  
tion of alcohol (financing, etc.). A crisis situation may be the cat-  
alyst to the expansion of alcohol production.

Gasohol use should be encouraged through public appeal. See at-  
tachments for gasoline savings.

Also, the Iowa Development Commission in conjunction with Land O'  
Lakes Cooperative, and in cooperation with the City of Des Moines and  
Northwestern Bell Telephone Company are testing a new blend of alcohol  
fuel which will enable refineries to produce more gasoline per barrel  
of crude oil, and at a lower cost.

\*See attachments two and three for the fuel test. (NOT INCLUDED)

from: Iowa Development Commission

**ACTION:** Increased Use of Gasohol, Regohol

**DESCRIPTION:** Encourage the use of gasohol/Regahol through publicity, or mandate (if supplies are available each station) to have at least one gasohol pump.

**CONSERVATION POTENTIAL:** Assume sufficient supplies are available so that gasohol sales can be increased from 5% to 20% of all gasoline sales, savings potential - 1.7%

**IMPLEMENTATION TIME:** On-going, depends primarily on the availability of alcohol. Publicity and enthusiasm at this stage seem to indicate that 20% gasohol sales are entirely feasible, demand exceeds supply.

**IMPLEMENTATION COSTS:** Currently being promoted by other agencies.

**ENFORCEMENT:** If mandated to require each service station to have at least one gasohol products pump, could be enforced through the Department of Agriculture weights and measures division

**ECONOMIC IMPACT:** Primary feedstock for alcohol being corn, supplies farmers a larger market for their wares, bringing more Iowa money back into the state. Alcohol plants in Iowa produce jobs for Iowans also.

**OTHER IMPACTS:** The EPA has determined gasohol reduces the levels of CO and hydrocarbons emitted; the level of aldehyde emissions are increased, however, there has been no determination as to whether or not aldehydes are detrimental to the health.

**EPC Comments** - an on-going measure, efforts should continue to be made to encourage further alcohol production. Losses to the RUTF should be counteracted by tying the state exemption on gasohol to the jobber wholesale price of unleaded. At this writing, a 5¢/gallon motor fuel tax could be assessed on gasohol to make it equal to the price of unleaded to the jobber.

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**ACTION:** Encourage High Density Development

**DESCRIPTION:** Either through rezoning or tax incentives, businesses would be encouraged to aggregate, making the feasibility of adequate transit coverage.

**CONSERVATION POTENTIAL:** If half of all travel for earning a living, family business, and social/recreational purposes could be directed toward high density centers, and 50% decrease in driving in these areas could be realized, savings could be as high as 22%

**IMPLEMENTATION TIME:** More than 5 years for the capital to be raised, enthusiasm to be generated, etc.

**IMPLEMENTATION COSTS:** Would be encouraged by the Iowa Development, costs would be absorbed by business concerns. If tax incentives are used, some loss of revenue.

**ENFORCEMENT:** Voluntary

**ECONOMIC IMPACT:** A boon to construction industry and transit operations, energy costs savings to vehicle operators.

**OTHER IMPACTS:** Would make possible the renovation of the urban parking lot, and would reduce accidents involving passenger vehicles as well as increasing the quality of Iowa air.

**EPC Comments -** Hopefully, businesses are already being encouraged to locate in high density areas. The effectiveness of such efforts at this time are unknown, however, increased efforts must be made to promote this painless method of reducing gasoline consumption.



**ACTION:** State Gas Rationing

**DESCRIPTION:** The State would set up its own coupon pool, using the historical supply figure reported by companies on EIA-25's and gasoline consumption figures for individual end-users.

**IMPLEMENTATION TIME:** Estimates run as high as two years.

**IMPLEMENTATION COSTS:** Estimates run well-over \$1 million.

**CONSERVATION POTENTIAL:** proportional to the reduced demand required, as the State has control as to how much gasoline would be sold.

**ECONOMIC IMPACTS:** If coupons were allowed to be freely sold and traded, costs to the consumer would approximate the "market-clearing" price.

**OTHER IMPACTS:** The administration for allocating coupons, determining priorities, hearings for exceptions, etc., would be costly and time-consuming to both the State and the consumer; inequities caused as a result would not be able to be remedied on a timely basis.

**EPC Comments** - not allowed under the Code, placing a surtax on gasoline would have the same savings potential, be more equitable, and would raise revenue for the state to alleviate some of the financial hardship experienced by low-income families (but is also not presently allowed under the Code)

ACTION: SURTAX ON RETAIL GASOLINE SALES

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DESCRIPTION: The state would add a surtax to the retail price of gasoline to cause a reduction in gasoline sales. In the M.I.T. report it was found that price elasticity of gasoline is about -0.15. This means that a surtax of 30 to 40 percent of retail price would be necessary to cause a 5 percent reduction in gasoline consumption.

CONSERVATION POTENTIAL: Five percent at a 30 - 40 percent surcharge.

IMPLEMENTATION TIME: 1 month

DIRECT COSTS: Initial Cost:

Continuing Cost: Additional administrative costs for retail stations.

ENFORCEMENT: Collection of surtax would be similar to state sales tax.

ECONOMIC IMPACT: Sharply raises the cost of travel. A surtax would affect people in the lower income brackets the hardest.

OTHER IMPACTS: If the surtaxes were not equivalent in bordering states, there would be a crossing of state lines to take advantage of lower prices, causing a gasoline wastage (MIT). The revenue obtained could be allocated to develop alternative energy sources such as synthetic fuels from liquification of coal and oil shale, hydrogen, alcohol fuels and others. If a fifty percent surtax were imposed, nearly one billion dollars per year would be available from Iowa alone if consumption rates remained at or near the present level. Based on 1973 statistics, 65 billion dollars would be available nationally.

**ACTION:** Gasoline Surtax

**DESCRIPTION:** A surtax would be placed on gasoline sales, level to be determined by the difference between the controlled price of gasoline and the decontrolled price (price that would result if supply equaled demand). The surtax would be collected through the Department of Revenue, and would be used to either relieve some of the financial hardship incurred by low-income vehicle operators with no alternative modes of travel available, or to develop and subsidize viable alternative transportation modes.

**CONSERVATION POTENTIAL:** Price could be adjusted to a level where supply would equal demand.

**IMPLEMENTATION TIME:** For price to be determined and retailers to adjust their prices, 2 - 3 weeks.

**IMPLEMENTATION COSTS:** Assuming a reliable shortfall figure, determination of surtax level could be delegated (agency), knowledgeable of pricing and market mechanisms. Presumably, such action would have been taken by other states and effective surtax levels in those states would be available for application to the Iowa market.

**ENFORCEMENT:** Department of Revenue would be responsible for collecting this tax, using the same mechanism it uses for collecting motor fuel taxes.

**ECONOMIC IMPACT:** Will create financial hardships for all, particularly individuals necessarily reliant on private automobiles.

**OTHER IMPACTS:** Revenue collected, if used to develop alternative energy sources or transportation modes, would be a long run benefit to Iowans, given that supplies of petroleum will always be uncertain and are continually being depleted. Prices for petroleum products will also continue to rise, therefore the financial hardship is inevitably unavoidable.

**EPC Comments -** Probably the most effective means of dealing with a severe supply disruption, or of reducing demand in the face of adequate supplies. The revenue collected, if used properly, could potentially contribute greatly to Iowa's independence from imported petroleum products and reduce their taxes. However, such a tax would be immensely unpopular and is regressive.

MEASURES AFFECTING EDUCATION

The next set of measures deal with gasoline consumption in the educational sector.

1. Prohibit driving to and from school (Department of Public Instruction and EPC comparison) - Authority for such action may exist under 93.8 according to the Attorney General's office. As students would have to walk up to three miles to get to school, this measure could cause undue hardship on a defenseless population. Also, parents making four trips between school and home to take their children to and from school may offset any savings that could be realized.
2. Limiting activities (Department of Public Instruction and EPC comparison) --Although authority may exist under 93.8, public resistance to this measure may be significant unless a severe shortage is apparent.
3. Four day school week (EPC) - may not be an effective measure; driving would probably increase beyond that used for commuting to school on the day off.
4. Reduction of educational conferences (Department of Public Instruction and EPC comparison) - while gasoline savings may not be significant, voluntary implementation by state educators would demonstrate a commitment to reduce unnecessary energy expenditures and could result in substantial financial savings.

CONSERVATION POTENTIAL

The implementation of these measures may result in savings of 2 - 2.5% of total gasoline consumption; increases in other driving may reduce this small savings even further.

ACTION: Prohibit driving to and from school.

DESCRIPTION: Students would not be allowed to drive to school nor would parents be allowed to transport students to school. Only students beyond the legal limit of two miles for elementary and three miles for high school students would be transported.

CONSERVATION POTENTIAL: Example: If 25,000 students drive 10 miles per day for 180 days, they would drive 45,000,000 miles. If the average mpg is 15, they would use 3,000,000 gallons of gas per school year.

IMPLEMENTATION TIME: Act by the State Legislature or Executive Order.

IMPLEMENTATION COST: Employment of additional enforcement officers.

ENFORCEMENT: Chapter 285.1 gives the school district the opportunity to provide transportation. It does not give authority to the school district or State Department to prevent driving to school.

ECONOMIC IMPACT: Gasoline would be saved.

OTHER IMPACTS: Students living within the two and three mile limit would have to walk to school. Also, public acceptance would be difficult. Also, the school day would have to be extended to include extra-curricular activities.

IOWA DOT COMMENTS:

ACTION: Prohibit or Restrict Driving to and from School

DESCRIPTION: Students would not be permitted to drive to school if other forms of transportation were available to them (determined by the individual school). Alternatively, parking fees would be assessed on students driving to school, with allowances or exemptions granted students who carpool. (Ideally, such a measure should instruct each school to devise and implement a program reducing student driving by some amount, to be administered by the student organization.)

CONSERVATION POTENTIAL: Assuming 40% of the civic, educational, and religious driving are for commuting to school, and a 50% reduction is achieved, savings potential - 1.3%

ENFORCEMENT: The individual school administration would be responsible for monitoring compliance and reduction achieved, reports would be made to the Department of Public Instruction.

IMPLEMENTATION TIME; If instructed to prepare such a plan in advance, plans could be administered within 30 days.

IMPLEMENTATION COSTS: --

ECONOMIC IMPACT; Students would be paying less for fuel, would reduce congestion around school parking lots.

OTHER IMPACTS: --

EPC Comments - the discretionary aspect of this measure (i.e. allowing individual schools to develop and administer their own plan to reduce student driving by a determined amount) is both the most feasible and the most socially acceptable, although it would take some time to develop. The mandatory aspects should only be used in case of severe disruptions in supply.

ACTION: Limiting activities on days school is not in session.

DESCRIPTION: This action is a part of the school partial closing plan. If schools would be closed on Monday, there would be no activities scheduled for Monday night.

CONSERVATION POTENTIAL: To close the school one night per week would save a small amount of fuel the school would be using for heat.

IMPLEMENTATION TIME: Announcement could be made at the same time as the partial school closing.

IMPLEMENTATION COST: Negligible

ENFORCEMENT: Should not be difficult but cooperation would be needed.

ECONOMIC IMPACT: Saving of some fuel

OTHER IMPACTS: Activities scheduled for the day school is closed could be moved to a day school is open. Acceptance should be good.

IOWA DOT COMMENTS:

**ACTION:** Restrict After-School Activities

**DESCRIPTION:** Extra-curricular activities would be limited to a certain number of nights during the week. These nights would be determined by the state and would apply to all educational institutions.

**CONSERVATION POTENTIAL:** Assume 30% of the gasoline consumed for civic, religious, and educational purposes are for extracurricular activities, and that 30% of the gasoline consumed for social/recreational activities are for attending extracurricular activities. Assume 20% reduction in both areas, savings potential - 1.4%

**IMPLEMENTATION TIME:** Could only be effectively planned at minimum 3 months before the beginning of the school year.

**IMPLEMENTATION COSTS:** --

**ENFORCEMENT:** Department of Public Instruction would be responsible for checking scheduling of extra-curricular activities to make sure activities were scheduled on permissible nights.

**ECONOMIC IMPACT:** Energy savings for both schools and spectators, may be some increased business for customer oriented businesses.

**OTHER IMPACTS:** Would result in Iowans having to make a choice as to which events or activities they would like to see; may reduce revenue from sports activities.

**EPC Comments -** Limiting activities to certain nights seems a much more equitable means of reducing gasoline consumption in this area than cutting back certain activities. From the aspect of driving to school activities, this would generally not be affected by cutting back on certain activities (presumably those with low attendance); by limiting activities to certain nights, forcing people to choose the events they most wish to attend, savings can also be realized in the social/recreational area. On the university level, may involve some conflicts with schedules prepared years in advance.



ACTION: Four Day School Week

DESCRIPTION: Reduce the school week to four days by either extending the school day or extending the school year.

CONSERVATION POTENTIAL: Assume 40% of civic, religious, and educational driving is to and from school. Assume 5% increase in social/recreational driving. Savings potential - (.3% increase)

IMPLEMENTATION TIME: Approximately 60 days before the beginning of a semester.

IMPLEMENTATION COSTS: --

ENFORCEMENT: Department of Public Instruction would be responsible for making sure each school had implemented the measure.

ECONOMIC IMPACT: Energy costs to the school for heating/cooling buildings would be reduced, customer oriented businesses would probably have an increase in business.

OTHER IMPACTS: Reduced congestion

EPC Comments - not a very feasible measure, the increase in other driving would most likely negate any savings produced by the measure.

ACTION: Reduction of education conferences

DESCRIPTION: Make a study of the number of educational conferences held per year to see if all were needed or could be combined with another meeting. Investigate the possible use of the Department's tele-network to the 15 Area Community Colleges.

CONSERVATION POTENTIAL: Unknown - Some gasoline could be saved.

IMPLEMENTATION TIME: very short

IMPLEMENTATION COST: almost none

ENFORCEMENT: not too difficult once the schedule was set.

ECONOMIC IMPACT: Should save some gasoline.

OTHER IMPACTS: Which meetings to eliminate would be difficult.

IOWA DOT COMMENTS:

ACTION: Reduce School Conferences

DESCRIPTION: Reduce number of, or educators sent to, school conferences.

CONSERVATION POTENTIAL: Compared with total gasoline consumption, less than .1%

ENFORCEMENT: Department of Public Instruction would be charged with screening the number of conferences Iowa educators attended, or, DPI could delegate that authority to a lower level.

IMPLEMENTATION TIME: Within 30 days.

IMPLEMENTATION COSTS: --

ECONOMIC IMPACT: Reduced energy costs to the schools

OTHER IMPACTS: may reduce business in areas heavily dependent upon conferences, may restrict the opportunities for educators to share experience with colleagues.

EPC Comment - Compared to the total gasoline consumption, measure would have minimal impact and may detract from the excellence of the educational system. Such a measure, while not appropriate to the plan, may be implemented by DPI as a sign of its commitment to reducing gasoline consumption.

The following measures deal with the agricultural sector. As the Department of Agriculture notes, unless the economic incentive is present, compliance on a voluntary level may be low. Savings for all the measures would be less than one per cent of total gasoline consumption. To make any of these measures mandatory would probably require legislation, according to the Attorney General's office.

#### CONSERVATION POTENTIAL

Because farming is such an energy intensive area, many adjustments may have already been made by farmers to reduce their energy costs. Gasoline is being used less on the farms now than previously; more farmers are switching to diesel equipment. Implementation of all the measures that follow would probably result in a savings of less than one per cent of total gasoline consumption (savings for each individual measure are savings in gasoline used in agricultural production) as a result.

FARM ENERGY CONSERVATION MEASURE #1 (Rev. #2)

ACTION: Reduced (Conservation) Tillage Practices

DESCRIPTION: Traditional field operations for intensive row cropping and other agriculture production practices have usually consisted of plowing (both fall and spring on many farms) discing, harrowing or spring tothing, planting, fertilizer (both at planting and later on many farms), weed control (by cultivation sometimes twice, or by herbicides), and harvesting. Soybeans eliminate the fertilizer function.

CONSERVATION POTENTIAL: Conservation tillage takes many forms and almost always involving elimination of moldboard plowing in some operations, usually soybeans. North Central Iowa's heavy black gumbo soils present problems in eliminating moldboard plowing on corn ground and in the fall. Conservation tillage practices may involve minimal to extensive changes of implements, and the cultural and management practices associated with them. Use of a chisel plow or disc to replace the moldboard plow is among the most common forms of conservation tillage. However, much greater attention is daily being paid to practices which significantly reduce tillage and trips over the land, such as "no-till" and "slot planting" systems.

If just one of the trips through the field can be eliminated, good savings in fuel would result; if two trips, there would be substantial savings. Conservation tillage offers conservation potential two ways: conservation of gasoline and diesel, and conservation of the soil. The following are then givens to factor: Each function through the field a value of 1; annual crop production usage of fuel: 144,000,000 gallons of diesel, 120,000,000 gallons of gasoline; increasing costs and limited availability of herbicides will inhibit growth in their use; the harvest function remaining unchanged; one-half of the crop acres are corn, one-third are soybeans, one-half of the remaining one-sixth are hay; 25% of the farms would go to minimum tillage to save one trip through the fields in each of the years 1981, 1982, 1983; that just one trip through the field on corn and beans saved over current operations: from an average of 8 to 7 on corn, and from an average of 6 to 5 on beans, and no trip saved on the other crops. Savings would occur primarily in the April through June and October through December quarters for both diesel and gasoline of 3% in 1981; 5.9% in 1982; and 8.9% in 1983.

IMPLEMENTATION TIME: Acquiring equipment to replace standard plows at 25% a year makes this a three to four year project. The disc and corn planter used together, and foregoing cultivation, could be implemented at any time, but the acceptance of the conservation tillage practice at 25% per year would give time for promotion of the proposal.

IMPLEMENTATION COST: Negligible for agencies promoting the practice. Some costs on research farms to quickly switch to conservation tillage, for the Extension Service in providing education seminars and written materials to all farmers, and more than \$200,000,000 for farmers to make the equipment switch, but in the longrun, there may be an actual cost savings because of the need for fewer implements.

ENFORCEMENT: None. Peer pressure. Voluntary.

ECONOMIC IMPACT: Negligible on a three or four year basis. Capital investment for equipment could be recovered rather quickly when one trip through a field is saved and diesel and gasoline near \$2.00 per gallon.

FARM ENERGY CONSERVATION MEASURE #1 (Rev. #2)

OTHER IMPACTS: Fall plowing particularly is generally conceded to be a soil waster in that wind and rain carry off considerable soil. This measure would materially reduce the loss of productive soil.

IOWA DEPARTMENT OF AGRICULTURE COMMENTS: With research farms proving the economic value of conservation tillage, and the economics easily manageable in today's farm economy, there is no political problem. This measure is feasible for a large percent of Iowa farmers, and in total is more desirable than feasible. However, generally if you can demonstrate to a farmer a financial savings (in this case, saving of expensive gasoline and diesel) he is rather quick to adopt new methods even without special financial incentive. In some ways, this proposal requires fewer changes than any of the others. It also can be considered, from a technology standpoint, a forward step, rather than a backward one as in most of the other proposals.

FARM ENERGY CONSERVATION MEASURE #5

ACTION: Reduce Crop Tillage Speed

DESCRIPTION: Farmers would reduce their tractor speed when pulling tillage implements (primarily cultivators and discs) from 6 MPH to 4 MPH.

CONSERVATION POTENTIAL: Assuming 90% compliance, saving on diesel and gasoline would vary from negligible to 10% for the function, and would occur in the April-June quarter. Saving of total consumption for the quarter would have to be considered less than 1%.

IMPLEMENTATION TIME: Would require 90 days promotion prior to the April-June quarter.

IMPLEMENTATION COST: Negligible, using a barrage of press, radio, and TV news releases for the 90 day period.

ENFORCEMENT: None. Peer pressure. Voluntary.

ECONOMIC IMPACT: Negligible. The small saving in fuel of gallons per hour is likely to be largely offset by the extra hours of tractor use on many farms.

OTHER IMPACTS: In a year when variable weather exceeds the norm, it is possible the slower tillage rate would make it impossible for all the crop to be tilled, with a resulting negative economic impact.

IOWA DEPARTMENT OF AGRICULTURE COMMENTS: A generally feasible measure with a fairly equitable impact. However, the potential savings are spotty. Where farmers are using their tractors beyond efficient speed and load levels, this is a good measure. But where tractor, speed, and load are matched, this proposal would have little impact on conservation, and the advantages would be more psychological than actual.

FARM ENERGY CONSERVATION MEASURE #4

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ACTION: Register Commercial Livestock Hauling Trucks

DESCRIPTION: Farmers selling only a few animals at a time would call a central point to be put on an animal pickup route so full trucks move to the livestock sales points. Registration to be at the County Extension office.

CONSERVATION POTENTIAL: Compliance potential almost impossible to predict. If there is an almost adequate fuel supply, compliance will be near nil. As shortages increase, compliance would increase. However, perhaps as little as 5% of all livestock moves two or three animals at a time. Savings in energy would certainly be well less than 1%, occurring about equally year round.

IMPLEMENTATION TIME: Three to six months.

IMPLEMENTATION COST: Small for the Extension office. The truck firms establishing the routes may find the costs difficult to project because of variable loads.

ENFORCEMENT: None. Voluntary.

ECONOMIC IMPACT: Small, but the burden would be on the small livestock feeder.

OTHER IMPACTS: As a voluntary program, it wouldn't have political repercussions. But sociologically, it destroys a way of farm life: the excuse to go to town, and attend a sale.

IOWA DEPARTMENT OF AGRICULTURE COMMENTS: A marginally feasible measure impacting smaller farmers. In an emergency this proposal would be palatable. If farmers are having trouble securing fuel for their pickups and small trucks, a route pickup system would be welcomed. Otherwise, forget it.



FARM ENERGY CONSERVATION MEASURE #3

ACTION: Coordinate Power and Ballast With Load

DESCRIPTION: Farmers would set goals to match their tractor power with their implements to be used, and would determine and use the proper amount of ballast on tractor wheels to keep slippage at a minimum.

CONSERVATION POTENTIAL: Assuming 90% compliance and a current compliance of 50%, saving on diesel and gasoline for the remaining 40% could reach 5% of the functions, and would occur primarily in the April-June and October-December quarters, and to a lesser extent the July-September quarter. Saving of total consumption would be projected at less than 1%.

IMPLEMENTATION TIME: To the extent that new equipment need be acquired, perhaps 35% could be accomplished in the year, and the remaining 65% in three or four years. The ballast for tractor wheels could be implemented through an educational program (perhaps using the Extension Service).

IMPLEMENTATION COST: Assuming no cost to the 50% now complying and the 10% who would not comply, the cost to the remaining farmers could easily exceed \$5000 per farm. Even this conservative figure would indicate a total cost exceeding \$250,000,000.

ENFORCEMENT: None. Voluntary.

ECONOMIC IMPACT: Negligible on a medium term basis, for the implements would be replaced anyway. On a short term basis, it would be economically unsound to make more than 35% of the changes in the first year.

OTHER IMPACTS: Could be energy wasteful in total to gear up plants for the extra volume for a short term project.

IOWA DEPARTMENT OF AGRICULTURE COMMENTS: A feasible measure with an equitable impact on a medium term basis. Every farmer wants efficient equipment and wants to use it efficiently. An educational program could be helpful. However, this proposal would have small impact on conservation, but there would be psychological benefits.

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FARM ENERGY CONSERVATION MEASURE #2

**ACTION:** Register Custom Harvesting Operators

**DESCRIPTION:** Custom operators, who harvest a minimum of 1,000 acres of crops annually, would register their potential for additional harvesting with the Iowa Department of Agriculture. The Department would publish a booklet (similar to the Iowa Hay & Straw Directory) which booklet would give name, address, and potential capacity with listing by counties. The booklet to be available to any farmer by request. Alternative: register at County Extension office.

**CONSERVATION POTENTIAL:** Assuming 25% compliance, and that larger custom operators are considerably more efficient time-wise but only slightly more efficient in smaller fields energy-wise, conservation of energy would be small, occurring primarily in the October-December quarter. Savings of diesel and gasoline could be projected at 1% for the quarter.

**IMPLEMENTATION TIME:** Three to six months ahead of the harvest, possibly with an update in the month of September.

**IMPLEMENTATION COST:** If press, radio, and TV news releases are used, and the registrants write requesting listing, almost the total cost will be in assembling and printing the booklet. A 5000 printing of the booklet might cost \$2,000, a 50,000 printing \$15,000. If the registering is done in the County Extension office, the only cost might be to keep a list up-to-date.

**ENFORCEMENT:** None. Voluntary.

**ECONOMIC IMPACT:** Small. The small operator would be paying a custom price for his harvesting which would be larger than his costs if he did it himself.

**OTHER IMPACTS:** In an emergency, some farm operators may be unable to secure gasoline and diesel for their harvests, then a custom operator may be the solution to a big problem in getting grain harvested.

**IOWA DEPARTMENT OF AGRICULTURE COMMENTS:** A feasible measure with an equitable impact. Despite the relatively small conservation this measure has merit in that it may aid the smaller farmer at a time when he desperately needs help: at harvest, when energy stocks are low.

## FARM ENERGY CONSERVATION MEASURE #7

ACTION: Tuneup engines

DESCRIPTION: Tuneup (plugs, points, timing, etc.) all gasoline and diesel engines on tractors, trucks, automobiles, and miscellaneous engines.

CONSERVATION POTENTIAL: Variable, as many engines are at top operating efficiency. If it can be assumed that half of all engines are in top shape, that a fourth can be improved some, that a fourth are in need of a tuneup, that maximum savings of one gallon in twenty (or 5%) is the norm for tuning an engine, and that tuned engines are used twice as much as the others, then we can factor this to be a total savings of 0.945% of both gasoline and diesel for all farm operations.

IMPLEMENTATION TIME: Three months.

IMPLEMENTATION COST: Negligible, using press, radio, and TV press releases for the three month period. For the farmer, any cost would be returned in fuel savings.

ENFORCEMENT: None. Voluntary.

ECONOMIC IMPACT: Negligible, as tuning costs would occur later, and speeding up tuning costs would largely be cancelled out by fuel savings.

OTHER IMPACTS: None.

IOWA DEPARTMENT OF AGRICULTURE COMMENTS: A feasible measure with equitable impacts. While normally it is felt diesel engines are newer, larger, and require potentially less maintenance, probably there is little significant difference in the savings between a gasoline engine and diesel engine of a tuned engine over an untuned one.

It is important that state government lead the way in promoting energy conservation. The following measures, proposed by the Iowa DOT and the Iowa Development Commission, suggest avenues to pursue. Savings as compared to total gasoline consumption would probably be negligible; the need to establish public credibility is substantial.

The Attorney General's office has indicated that legislation may be necessary to implement some of the measures, in particular employee contracts may need to be renegotiated.

#### CONSERVATION POTENTIAL

Energy consumed in State-related business is small when compared with total energy consumption. Therefore, even extensive gasoline savings on the state level would contribute very little to total gasoline consumption reduction.

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PROPOSAL: STATE GOVERNMENT EXAMPLE

In response to your request for more information regarding the Iowa Development Commissions' role in energy conservation we offer the following.

Understanding that government agencies should set an example in energy conservation there are several measures which we, as an agency, could undertake. The measures are ranked in order of ease of application.

1. Shut off unnecessary lights.
2. During summer months raise thermostat setting to 78 or 80 degrees, running the fan on the furnace continually during the work day to keep the air circulating. In the winter months a thermostat setting of 65 to 68 degrees could be established.
3. Use of Gasohol whenever possible. Availability of the product should increase due to Amoco's decision to pump the product.
4. Eliminate travel wherever possible and coordinate travel when possible with other agencies. Perhaps a central clearing desk would be established. Its function would be to record travel plans by state agencies which would be called in soon after travel arrangements are made. The person who monitors these calls could then attempt to coordinate travel based upon destination and duration.
5. Encourage IDC employees who reside outside Des Moines to car pool. Those employees who live in Des Moines should be encouraged to utilize mass transportation or car pool.
6. Use of telephone and mail services whenever possible to conduct business. Train staff to utilize the conference call.
7. Determine the legality of changing the statutes covering state agency commission meetings to quarterly or semi-annually. Perhaps conference calls could be utilized as well.

It is quite possible that any or all these measures may be applicable to other agencies as well. Especially the use of Gasohol.

from: Iowa Development Commission

VOLUNTARY

LEVEL: 5a

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ACTION: State Government Example - Bus Pass Program

DESCRIPTION: State government agencies would subsidize transit passes to commuting employees as an example to other employers.

CONSERVATION POTENTIAL: The overall potential for conservation from this action is quite small, limited to the number of government employees who could take advantage of mass transit modes.

IMPLEMENTATION TIME: The time needed to implement this action would be very short.

IMPLEMENTATION COSTS: Initial Cost: The initial costs of this action would be minor consisting mainly of locating adequate mass transit means for a sizable number of government employees.

Continuing Costs: The continuing costs would depend largely upon usership of such a program.

ENFORCEMENT: Voluntary.

ECONOMIC IMPACT: This action would increase costs to state government.

OTHER IMPACTS: This action would encourage use of mass transit.

VOLUNTARY

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LEVEL: 5b

ACTION: State Government Example - Limit Highway Grass *mowing*

DESCRIPTION: Mowing the medians, intersections, cloverleaves, etc. would be limited or even banned on most of the state's highways.

CONSERVATION POTENTIAL: In this case conservation potential is likely to be quite small since Iowa DOT has been doing this now for several years.

IMPLEMENTATION TIME: This action has already been implemented.

IMPLEMENTATION COSTS: Very low costs limited to the costs of special grasses to help control growth.

ENFORCEMENT: Voluntary.

VOLUNTARY

LEVEL 5c

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ACTION: STATE GOVERNMENT EXAMPLE - LIMIT SNOW REMOVAL

DESCRIPTION: The purpose of this action would be to limit the amount of snow removal by the state.

CONSERVATION POTENTIAL: The conservation potential of this would be very minor. Due to the infrequency of snow blockage coupled with the minor possible savings per occurrence driver fuel usage might increase.

IMPLEMENTATION TIME: The implementation time involved in this action would be minimal.

IMPLEMENTATION COST: There are no implementation costs involved in this action.

ENFORCEMENT:

ECONOMIC IMPACT: This action could possibly create an economic slow down.

OTHER IMPACTS: This action would decrease drivers safety during the winter months, creating an inconvenience for the public.



VOLUNTARY

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LEVEL: 5d

ACTION: State Government Example - Parking Space Fee

DESCRIPTION: State agencies would charge parking space fees to employees. Lower rates could be charged to high occupancy vehicles.

CONSERVATION POTENTIAL: The potential of this action to have any effect on conservation would depend largely upon the number of employees who would not drive (would carpool or take mass transit) to keep from paying parking fees.

IMPLEMENTATION TIME: It would take very little time to implement such a program.

IMPLEMENTATION COSTS: The costs would be low to moderate depending upon the method used in implementing the program.

ENFORCEMENT: Some type of enforcement (gate control) would have to be set up to be certain employees would follow guidelines.

ECONOMIC IMPACT: Cost to employees would be moderate.

OTHER IMPACTS: This action would encourage carpooling.

VOLUNTARY

LEVEL: 5e

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ACTION: State Government Example - Carpool

DESCRIPTION: State agencies would organize carpool systems for their employees.

CONSERVATION POTENTIAL: If all persons who drove to work alone 5 miles or more were to join a carpool of 4 persons, the Ames DOT Central Complex alone could save 82,000 gallons of fuel per year.

IMPLEMENTATION TIME: The time required to implement such a program should be very short.

IMPLEMENTATION COSTS: Costs should be minor.

ENFORCEMENT:

ECONOMIC IMPACT: The employees participating in a carpool would find some savings by leaving their own personal cars at home. Many persons cannot easily pool because of working hours, etc.

OTHER IMPACTS: Fewer cars in the parking lots would mean lower parking lot maintenance costs.

VOLUNTARY

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LEVEL: 5f

ACTION: State Government Example - Commuter Bus

DESCRIPTION: State agencies would sponsor a commuter bus to drive employees to and from work.

CONSERVATION POTENTIAL: The potential for any real conservation is likely to be small to moderate at best.

IMPLEMENTATION TIME: The time required to implement such a program is undetermined and would depend upon the availability of adequate commuter buses and funds to purchase them.

IMPLEMENTATION COSTS:

<u>Initial Costs:</u>	Buses, commuter services center
<u>Fixed Costs:</u>	Bus maintenance, insurance etc.
<u>Variable Costs:</u>	Fuel, oil, maintenance, etc. would
Varia	depend upon route structures.

ENFORCEMENT: Some type of mandatory ridership may be needed to keep the system cost effective.

ECONOMIC IMPACT: The state would incur some costs while the employees would find savings.

OTHER IMPACTS: This action would help encourage employers to develop commuter systems of their own.



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