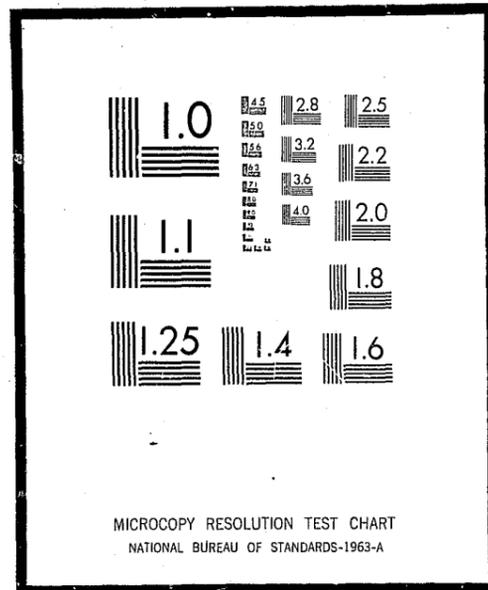


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NOTES CONCERNING THE IMPACT  
OF THE ENERGY CRISIS ON  
THE CRIMINAL JUSTICE SYSTEM

NOVEMBER 1973

Equipment Systems Improvement Program Report  
prepared for



U.S. DEPARTMENT OF JUSTICE  
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION  
NATIONAL INSTITUTE OF LAW ENFORCEMENT  
AND CRIMINAL JUSTICE

MITRE

THE MITRE CORPORATION

WASHINGTON OPERATIONS

THE EQUIPMENT SYSTEMS IMPROVEMENT PROGRAM

WORKING PAPER

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Following a Congressional mandate\* to develop new and improved techniques and equipment to strengthen law enforcement and criminal justice, the National Institute of Law Enforcement and Criminal Justice under the Law Enforcement Assistance Administration of the Department of Justice established the Equipment Systems Improvement Program. The objectives of the Program are to determine the priority needs of the criminal justice community to help in its fight against crime, and to mobilize industry to satisfy these needs. A close working relationship is maintained with operating agencies of the criminal justice community by assigning systems analysts to work directly within the operational departments of police, courts and corrections to conduct studies related to their operational objectives.

This document is a research report from this analytical effort. It is a product of studies performed by systems analysts of the MITRE Corporation, a not-for-profit Federal Contract Research Center retained by the National Institute to assist in the definition of equipment priorities. It is one of a continuing series of reports to support the program decisions of the Institute relative to equipment development, equipment standardization and application guidelines. Comments and recommendations for revision are invited. Suggestions should be addressed to the Director, Advanced Technology Division, National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration, U. S. Department of Justice, Washington, D. C. 20530.

Gerald M. Caplan, Director  
National Institute of Law  
Enforcement and Criminal Justice

Subject: Notes Concerning the Impact of the  
Energy Crisis on The Criminal Justice  
System

To: W. E. Holden

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ABSTRACT:

This paper presents a summary and generalization of the findings of a brief survey of facts and perceptions of the impact of the energy crisis on the criminal justice system. Six specific questions as posed by the National Institute of Law Enforcement and Criminal Justice are discussed.

\* Section 402(b) of the Omnibus Crime Control and Safe Streets Act of 1968, as amended.

THIS INFORMAL PAPER PRESENTS TENTATIVE INFORMATION FOR LIMITED DISTRIBUTION.

## EXECUTIVE SUMMARY

These notes constitute a summary and generalization of the findings of a brief survey of facts and perceptions of the impact of the energy crisis on the criminal justice system. The statistics of fuel usage and electrical power consumption and the effects of a reduction of either were examined. The historical precedents of the impact of earlier gasoline rationing were examined and a brief glimpse of power company plans for accommodation to an energy shortage was obtained. Many police, court and correctional officials were asked for their perceptions of the impact on their own agencies. The net result was a spectrum of possibilities ranging from no impact at all to a serious increase in crime and reduction in ability to cope.

To bring the results to a focus on the question of the impact of the energy crisis on the criminal justice system, all of the information obtained was generalized into answers to six specific questions posed by the National Institute of Law Enforcement and Criminal Justice:

- I What new crimes are likely to occur as a result of the energy crisis?
- II What is the immediate impact of the energy crisis on crime control and deterrence?
- III What is the impact of a brownout?
- IV What are new research projects for energy conservation within the criminal justice system that could be undertaken by the National Institute?
- V What is the impact on computer-based systems of a brownout or lack of energy?
- VI What is the impact on communications in the criminal justice system of a brownout or lack of energy?

Certain additional sets of statistics and reports of the perceptions of officials are included in Appendices.

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I. WHAT NEW CRIMES ARE LIKELY TO OCCUR AS A RESULT OF THE ENERGY CRISIS?

A. Crimes for which new Criminal Justice System response must be developed:

1. Violation of Energy Use and EPA Restrictions - lights, heat level, "Sunday" sales and driving, speeding, illegal fuels, removal of emission control equipment, etc. Primary impact is to burden the system.

2. Fraudulent Diversion of Allocated Fuels - blackmarket, conspiracy, fraud, counterfeit and theft of allocation documents, etc. Primary impact is shift from other fraudulent activities and increased energy "shortage."\*

B. Crimes requiring a shift in CJS emphasis:

1. Theft of Fuel and Electricity - truck hijacking, theft from storage tanks or vehicles, bypassing meters, etc. Primary impact is shift in police investigation and possible increase in misdemeanors.

2. Fraudulent sale of "energy-saving" devices - carburetor additives and gadgets, electricity boosters, fuel additives and gadgets, phoney insulation, etc. Primary impact is shift in police investigation.

3. Violation of Export/Import Restrictions and Anti-trust Regulations - import or export of controlled commodities without license, use of energy resources to obtain illegal market advantages, etc. Primary impact is minor at the local level.

C. Changes in conventional crime as a result of conditions brought about by the energy crisis:

1. Increases in Commercial Burglary and Reduction in Residential Burglary - brought about by shorter business hours, reduced commercial lighting and increased residential occupancy. Primary impact is a shift in patrol patterns.

2. Changes in Distribution of Assaults - brought about by changed street lighting, transportation patterns, pedestrian traffic, etc. Primary impact is a shift in patrol patterns.

\* During WW II, 5% of the civil supply (2,500,000 gallons/day) was siphoned off by counterfeit and theft - from a speech by Chester D. Bowles, Administrator, Office of Price Administration, June 1944.

3. Changes in Public Disorder Patterns - gang disturbances, protests, etc. brought about by changed school hours, frustrations, idle time. Historical precedent in the 30's suggests a reduction in public disorder. Precedent in the 60's suggests an increase. Reduced mobility would limit the size of disorders.

4. Shift in Organized Crime Activity - brought about by changed market pressures. Primary impact is in focus of police investigations and potential for CJS corruption.

II. WHAT IS THE IMMEDIATE IMPACT OF THE ENERGY CRISIS ON CRIME CONTROL AND DETERRENCE?

A. Load on police resources will be higher due to: increased nuisance calls, false alarms, traffic emergencies, special brownout assignments, etc. Primary impact will be reduced response capability. Could result in expanded discretionary enforcement.

\*B. Police mobility will be reduced due to: less fuel, higher cost of fuel, concentration of vehicles on patrol, etc. Primary impact will be reduced surveillance and investigation. Could result in reduced clearance and conviction rates.

\*C. Police Communications and computer equipment will operate at less than full capability due to: brownout voltage reduction, air conditioning failure, temporary outages, etc. Primary impact is reduced contact with dispatcher. Could result in increased danger to officer and subsequent disinclination to investigate aggressively.

\*D. Trial delay may be increased due to: increased witness no-show, increased litigation, temporary court closure during blackout and heating failure, etc. Primary impact - crowded lock-ups and more plea bargaining and diversion. Could result in a lower conviction rate.

\*E. Parole investigation and supervision will be reduced due to: lack of official and client mobility. Primary impact will be loss of control of parolees. Could result in modification of parole procedures and possible increase in recidivism.

\*F. Prison inmate discontent will increase due to: reduced hot water and laundry, reduced transportation of inmates for job release, reduced use of vocational and industrial shops, etc. Primary impact will be increased inmate crime and riots. Could result in increased repressive measures.

\*Assumes no special dispensation for criminal justice agencies from emergency decrees.

III. WHAT IS THE IMPACT OF A BROWNOUT?

A. Brownouts can be any one or a combination of three implementations:

1. Electrical voltage reduction of 5-8 percent commonly employed during peak capacity overloads - no large effects reported on criminal justice systems.

2. Scheduled selective area blackouts or load shedding. The effect is equivalent to area outages experienced as a result of storms.

3. Decreased use of outdoor lighting equivalent to wartime dimouts.

B. Possible Effects:

1. Increased number of burglary/robbery alarms, false alarms most likely to affect older, deteriorated and marginally designed equipments. Primary impact - increased nuisance burden.

2. Reduced level of street lighting may change street crime patterns - voltage reduction of 10 percent produces 30 percent reduction of lighting for incandescent lamps - little effect on arc or vapor lamps. Blackouts produce almost total darkness. Spot reduction of outdoor lighting produces a general reduction in luminance levels. Primary impact - requirement for increased patrol activity.

3. Blackouts may cause loss of traffic signals - Primary impact - increased police resources needed to handle traffic congestion.

4. Loss of elevator service during blackouts and voltage reduction - loss of elevator service in high rise buildings will make access to upper floors difficult for emergency services. Primary impact - increased burden on police emergency services.

5. Cessation of electricity dependent transportation during blackouts - May strand passengers - if possible should be scheduled in such a manner as to provide minimum impact. Primary impact - burden on traffic control and emergency services.

6. Increased maintenance load on CJS organizations - Brownouts and failures of equipment from low voltage plus extended operation of auxiliary power generators will increase repair and maintenance. Primary impact - diversion of maintenance facilities and personnel.

7. Increased assault and battery - Decreased heating and shorter commercial hours will result in increased congregation for warmth and drinking.

IV. WHAT ARE NEW RESEARCH PROJECTS FOR ENERGY CONSERVATION WITHIN THE CRIMINAL JUSTICE SYSTEM THAT COULD BE UNDERTAKEN BY THE NATIONAL INSTITUTE?

The two largest energy uses in the criminal justice system are transportation and heating. The problems associated with conservation of heating (and air conditioning) resources are well documented and would not be appropriate research areas for NILECJ. There are, of course, more common sense actions which can reduce heating and air conditioning requirements.

The area of transportation is, however, a fertile field for research. Projects which can discover ways to provide transport and:

- a. use less fuel,
- b. use fuel more effectively or efficiently, or
- c. avoid fuel expenditures

should be supported. Other projects can eliminate the need for transport. Some project areas are:

- a. smaller patrol cars,
- b. use of lighter vehicles than cars for appropriate activities,
- c. efficient patrol strategies,
- d. interior design or arrangements in cars to permit more efficient use of the space available,
- e. strategies for implementing known fuel conservation approaches which have not achieved wide acceptance,
- f. increased use of foot patrol,
- g. electronic and optical equipment which would enhance a foot patrolman's efficacy in low ambient lighting.
- h. transportation resource allocation algorithm,
- i. efficient engine development,
- j. location of criminal justice facilities (police, courts, jails) for minimizing transport requirements,
- k. improved airborne vehicles for police,
- l. development of video and audio transmission equipment adequate to replace the need for physical transportation of documents (e.g., warrants) and people (e.g., witnesses, prisoners, and police officers).

- m. improved governmental organization to enable citizenry and officials to accomplish their legal affairs with minimum movement between buildings,
- n. wider applications of mounted patrol, and
- o. wider application of canine patrol.

V. WHAT IS THE IMPACT ON COMPUTER-BASED SYSTEMS OF A BROWNOUT OR LACK OF ENERGY?

A. Manifestations of Energy Shortage (relevant to computer systems)

1. Scheduled or unscheduled "Brownout" (i.e., reduction in line voltage)
2. Scheduled or unscheduled "Blackout" (i.e., loss of commercial power)

B. General Considerations

1. Computers can be adversely affected by reductions in steady-state line voltage.
  - a. Within stated tolerances (e.g., -8% on IBM equipment) there should be no perceivable effects.
  - b. For voltage reductions beyond manufacturer's tolerances, error rates would become excessive and, in most cases, damage would occur if system operation continued.
  - c. Most systems have automatic detection capabilities which shut the system down when a steady-state voltage below design tolerance occurs.
  - d. Sudden total loss of power could, but is normally unlikely to, cause damage to system components.
2. Advance notice of scheduled brownouts or blackouts is desirable because:
  - a. Scheduled brownouts within range of system tolerance can be ignored.
  - b. Scheduled blackouts or brownouts which would cause system shutdown can best be handled by shutting the system down in an "orderly" fashion, which can normally be accomplished in 10 to 20 minutes.
  - c. "Orderly" shutdown involves such actions as: notifying on-line users of an impending shutdown; terminating all I/O activity so that all files are properly closed when shutdown occurs; and saving accounting information.

- d. Sudden shutdown results in a loss of accounting information, and can occasionally result in loss of a file, damage to I/O devices, circuit components.
- e. Where a backup power source is available the systems can be transferred with no or minimum disturbance.

3. Advance notice of scheduled brownouts or blackouts is particularly important for real-time systems. Real-time systems often perform critical functions (e.g., in New York, SPRINT performs on-line dispatching of police in response to emergency, as well as routine calls). In such systems, sudden power loss can often result in lost transactions, whereas, advance notice would permit operation in a backup (manual) system or with backup power by the time commercial power is actually lost.

C. Protective Measures

1. Software Features

It is possible to write special interrupt routines which are called when the input voltage drops below some chosen threshold. These routines could perform critical functions associated with an orderly shutdown, such as properly closing files, just prior to causing system shutdown.

2. Short-term Auxiliary Power Sources

Auxiliary (battery) power sources are available which operate for approximately 20 minutes, thus, guaranteeing orderly shutdown, even in the event of an unscheduled blackout. These power sources are available at power levels suitable for reasonably large systems (e.g., IBM 370/145).

3. Voltage Regulators

Voltage regulators are available to maintain the input voltage to the computer constant over a fairly wide range of line voltages.

4. Backup Power Sources

Local generators can be used to run a computer system when commercial power is unavailable or unsatisfactory. When switch-over occurs, without warning, it usually takes about 10 minutes to bring the system back to normal operation.

5. Uninterruptible Power Systems

There are power systems available, which in effect, isolate the computer from any changes in line voltage including total blackout. Such systems are expensive, since they involve not only an auxiliary power source, but also some way of precluding power line transients or switchover transients from ever reaching the computer.

6. Status of Protective Measures

Although these protective measures are available and effective, a brief survey showed that many of the larger computer systems had none beyond the designed voltage tolerance of the equipment with automatic shutdown in the event of line voltage below tolerance.

VI. WHAT IS THE IMPACT ON COMMUNICATIONS IN THE CRIMINAL JUSTICE SYSTEM OF A BROWNOUT OR LACK OF ENERGY?

The police communications system may be divided into the three major elements of:

A. Radio Communications

1. Central Station - critical link is transmitting out to the mobile units. At 10% voltage reduction, the range may be reduced up to 30%. At 20% voltage reduction, the range may be reduced up to 70%.

2. Patrol Car and Patrolman Portable Radios - no foreseeable effect except from outages of central station or relay equipment.

3. Relay - no impact unless blackout exceeds emergency battery time capacity. Some cities report two-hour capacity. There possibly are some smaller cities with no emergency batteries.

B. Microwave Relays

On microwave data links, the message error rates will be increased as voltage is decreased. Blackouts in excess of emergency battery time capacity will cause outages.

C. Teletype and Telephone

Most teletype equipment will operate over a  $\pm 10\%$  voltage variation. Telephones should be unaffected.

Impact of these voltage reductions and blackouts will be reduced by voltage-tolerant equipment specifications and the availability of auxiliary power generation equipment. Examples of equipment specification voltage tolerances are:

Central station transmitter	$\pm 10$ or 20%
Central station receiver	$\pm 10$ or 20%
Teletype equipment	$\pm 10\%$
Microwave relays	$\pm 10\%$
Displays	$\pm 20\%$

These tolerances all exceed the anticipated 5 to 8% brownout voltage reduction planned.

D. Emergency Power Sources

The impact of blackouts, particularly if scheduled, will be reduced by the availability of emergency power sources. A summary of emergency power availability provided by the Civil Defense Agency shows that:

1. There are 4,000 Emergency Operating Centers (EOC) which probably have new generators.
2. EOCs are required to have two week fuel supply.
3. Three thousand other police departments probably have emergency power.
4. Therefore, the estimate is that 7,000 units have emergency power.
5. It is estimated that this represents about 50% of all departments and nearly all large departments.
6. Most emergency power units are not automatic. These units must be manually started so temporary disruptions would occur during unscheduled blackouts.

E. Telephones

Commercial telephone equipment may be considered as essentially not vulnerable to outages of the electrical systems as the telephone companies have adequate emergency power sources.

APPENDIX A

NOTES CONCERNING POLICE VEHICLES

Number of patrol cars in U. S. in 1972 (from NBS survey)	160,000
Number of other police vehicles (scooters, cycles, vans, etc.)	20,000
(Number of passenger vehicles in U. S. in 1971 - 83,121,000)	
Approximate annual patrol car miles	30,000 miles
Approximate average annual gasoline consumption per patrol car (based on 8 miles/gallon achieved with emission controlled cars in good condition)	3,750 gallons
Approximate total annual patrol car gasoline consumption	600 million gallons
Gasoline saved annually if patrol car consump- tion is based on 12 miles/gallon (achieved with pre-emission controlled cars in good condition)	200 million gallons
Gasoline saved annually if patrol strategies are changed to reduce patrol car miles to 20,000 per year	200 million gallons
Gasoline saved annually if patrol car annual miles are reduced to 20,000 and emission control losses are eliminated	333 million gallons

APPENDIX B

NOTES ON THE IMPACT OF THE ENERGY CRISIS IN CORRECTIONS

The state corrections system contains about 200,000 inmates in 400 institutions (exclusive of local jail facilities).

The most immediate impact of an energy crisis on the correctional system and its administrators will be in planning for the utilization of available energy and determining how to meet future energy requirements. The following is an example of the approximate priority (number 1 is highest) for the utilization of energy within correctional institutions based on the judgments of officials in the correctional field:

1. Security operations
2. Building heating
3. Non-security institution operations
  - . cooking
  - . maintenance
4. Educational programs
5. Non-security lighting and low-energy consuming programs
6. Transportation (staff and inmates)
7. Laundry services/water heating
8. Construction (new facilities, remodeling)
9. High energy consuming programs (some vocational shops and industries).

The implication is that vocational shops and industries would be the first to go in an energy crisis.

The following is a list of correctional area problems that will be immediately impacted by an energy crisis:

. Increased Inmate Discontent (with its potential for security problems brought about by the following energy crisis related problems:

- . reduced heating (or air conditioning)

- . reduced lighting
- . colder food
- . reduced use of hot water
- . reduced laundry service
- . reduced transportation of inmates for job release
- . reduced use of vocational and industries shops
- . increased inmate population (new energy crisis related crimes and return of unemployable parolees)
- . Increased Inmate Idle Time  
brought about by curtailment of vocational and industries programs both within and without of the institutions
- . Increased Staff Workload due to
  - . electrical locking system failures requiring manual operation of previously automatic systems
  - . reduced staff caused by lack of available transportation to the institution
  - . increased work required to maintain large central heating plants that will have to replace smaller heating units
  - . increased inmate population due to return unemployable parolees
- . Increased Cost to Convert from Oil to Coal  
Many institutions have recently converted from coal to oil heat at great expense. It is estimated that the reconversion to coal would cost an additional \$250,000 per installation.
- . Reduced Construction of Improved Facilities  
Because of reduced energy for construction equipment and increased energy costs.

APPENDIX C

NOTES ON THE PERCEPTIONS AND DECISIONS OF A SMALL CITY  
POLICE JURISDICTION CONCERNING THE ENERGY CRISIS

Expected New Crimes:

- . counterfeiting of gas ration stamps
- . theft of gas ration stamps
- . hijacking of gasoline trucks and oil trucks
- . decrease in security lighting would cause extra burglary, mugging, vandalism
- . decrease in street lighting would cause extra auto collisions
- . congregating for warmth and drinking for warmth will cause extra assaults.

Impact on Crime Control:

- . extra workload on police to enforce new federal regulations
- . implementation of contingency police vehicle plans.

Contingency Police Vehicle Plans:

- . Plan 1: (10% cut in gasoline supply)  
Revised patrol plans
- . Plan 2: (25% cut in gasoline supply)  
Administrators' cars would be eliminated. Detective cars would be cut back, requiring scheduling for use of detective cars.

Perceptions of Chief:

- . feels most patrol is ineffective and is a product of traditional stress on supervisor to keep troops moving and can be reduced
- . thinks stationary patrol in high-visibility positions would not affect morale badly but would reduce stress and boredom of constant driving
- . estimates contingency Plan 1 would not reduce patrol services
- . estimates brownouts (reduced powerline voltage) and selective blackouts would tremendously increase crime rate.
- . Would like to see research concentrate on a smaller, less powerful, less luxurious car.

Perceptions of Public Safety Director:

- . uncertain whether reduced lighting at night would actually increase street crime. Thinks people might just stay home more
- . police would have to provide more personal services to citizens as a result of gasoline shortage (based on experience during WWII). Stranded travellers would need shelter, and sick people would need transport to medical facilities.
- . serious effect on police surveillance techniques because:
  - (1) standing surveillance is much more obvious than moving surveillance; and
  - (2) lack of traffic would destroy cover for surveillance.
- . electric locks would not be affected by brownout because all locks have manual override.

**END**