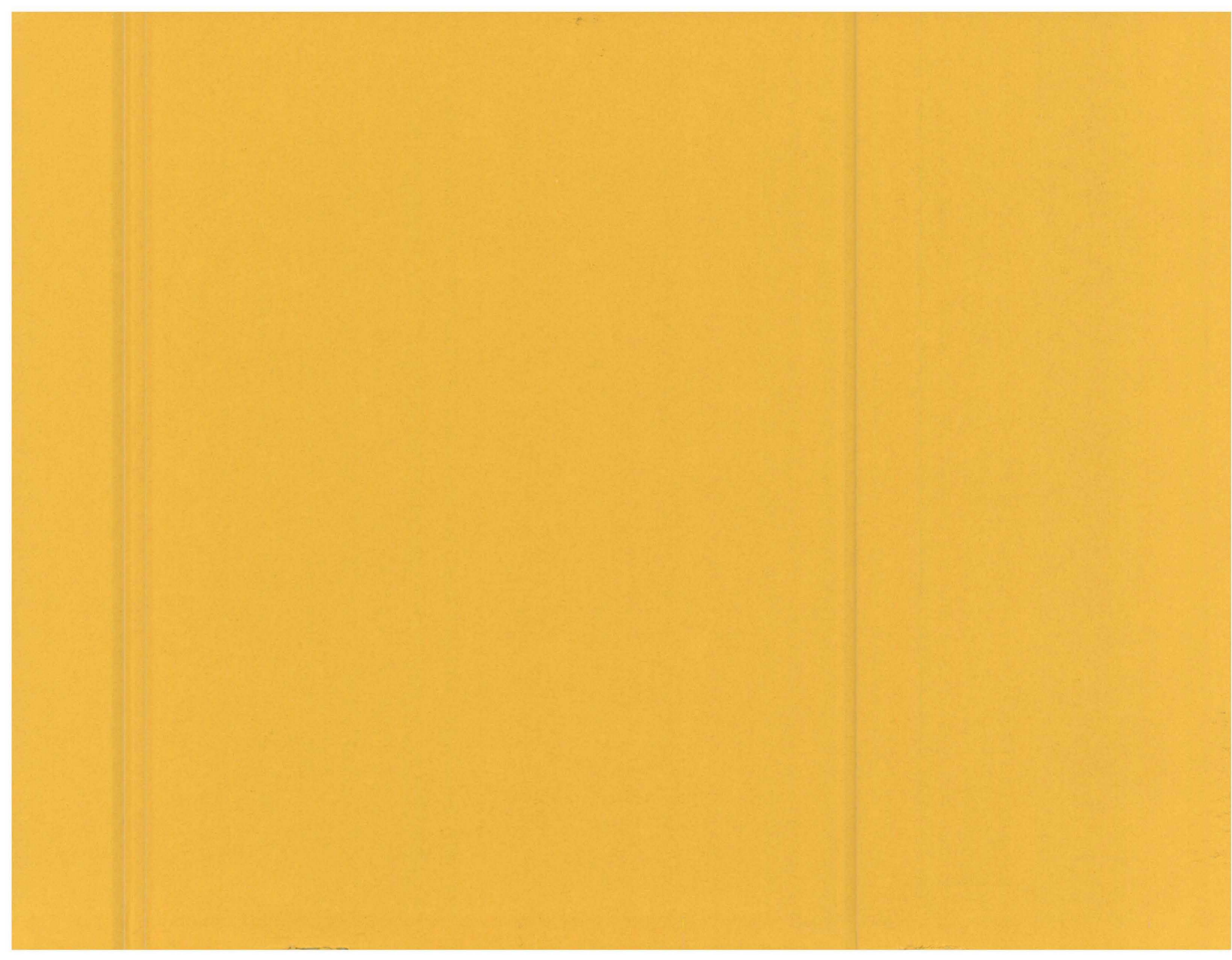


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ENERGY POLICY
COUNCIL
RAILROAD
REPORT

AUG. 6, 1974





ACKNOWLEDGEMENTS

The railroad study represents an attempt to assemble quickly the information needed by the Energy Policy Council in deciding how the railroad portions of Senate File 1222 should be implemented.

The council is heavily indebted to members of a railroad task force and its resource persons for the advice they gave on the proposed program.

The report was prepared by a group of temporary employes including Paul F. Kilmer, Gary F. McCormick, Steven A. Widdes, Gordon T. Schmittling, Ricky D. Knight, Skip Laitner, William W. Drury, George Yen, C. Suzanne Thomsen and Linda Sherwood. Assistant Energy Policy Director Patrick D. Cavanaugh provided great assistance.

The estimated cost of the study is \$2,500.

Although many persons were involved in preparing the report, the judgments incorporated in it remain the responsibility of Energy Policy Director John Millhone.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT
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PHYSICS 351

LECTURE 10: THE HADRONIC SPECTRUM

1. Introduction: The hadronic spectrum is the spectrum of the strong interaction.

2. The quark model: The hadrons are composed of quarks and antiquarks.

3. The meson spectrum: The mesons are composed of a quark and an antiquark.

4. The baryon spectrum: The baryons are composed of three quarks.

5. The exotic hadrons: The exotic hadrons are composed of more than three quarks.

6. The glueballs: The glueballs are composed of gluons.

7. The hybrids: The hybrids are composed of quarks and gluons.

8. The tetraquarks: The tetraquarks are composed of four quarks.

9. The pentaquarks: The pentaquarks are composed of five quarks.

10. The hexaquarks: The hexaquarks are composed of six quarks.

11. The heptaquarks: The heptaquarks are composed of seven quarks.

12. The octaquarks: The octaquarks are composed of eight quarks.

13. The nonaquarks: The nonaquarks are composed of more than eight quarks.

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21. The nonaquarks: The nonaquarks are composed of more than eight quarks.

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INTRODUCTION

Under the Iowa Rail Assistance plan provided in S.F. 1222, the Energy Policy Council has the responsibility to provide \$3 million in financial assistance to upgrade Iowa's rail branch lines. Although this is a considerable investment which speaks well for the Iowa Legislature's willingness to aid this long neglected aspect of Iowa's transportation system, \$3 million only begins this massive project.

In an effort to maximize the benefits of this appropriated fund, the Energy Policy office has investigated the possibility of encouraging shipper groups and communities on affected lines to also contribute to the upgrade projects.

After discussions with communities and shippers on these lines with a high priority for assistance, members of the special rail study group estimate that local funds may well equal approximately 50 per cent of the state's contribution.

Arrangements with the railroads should be possible which would permit the state to realize at least a partial return on its investment in the line. Utilizing these arrangements, the state could expect at least one-half of its initial investment of \$3 million to be reimbursed. This means the state could accomplish a \$4½ million improvement to its rail service for a \$1½ million investment.

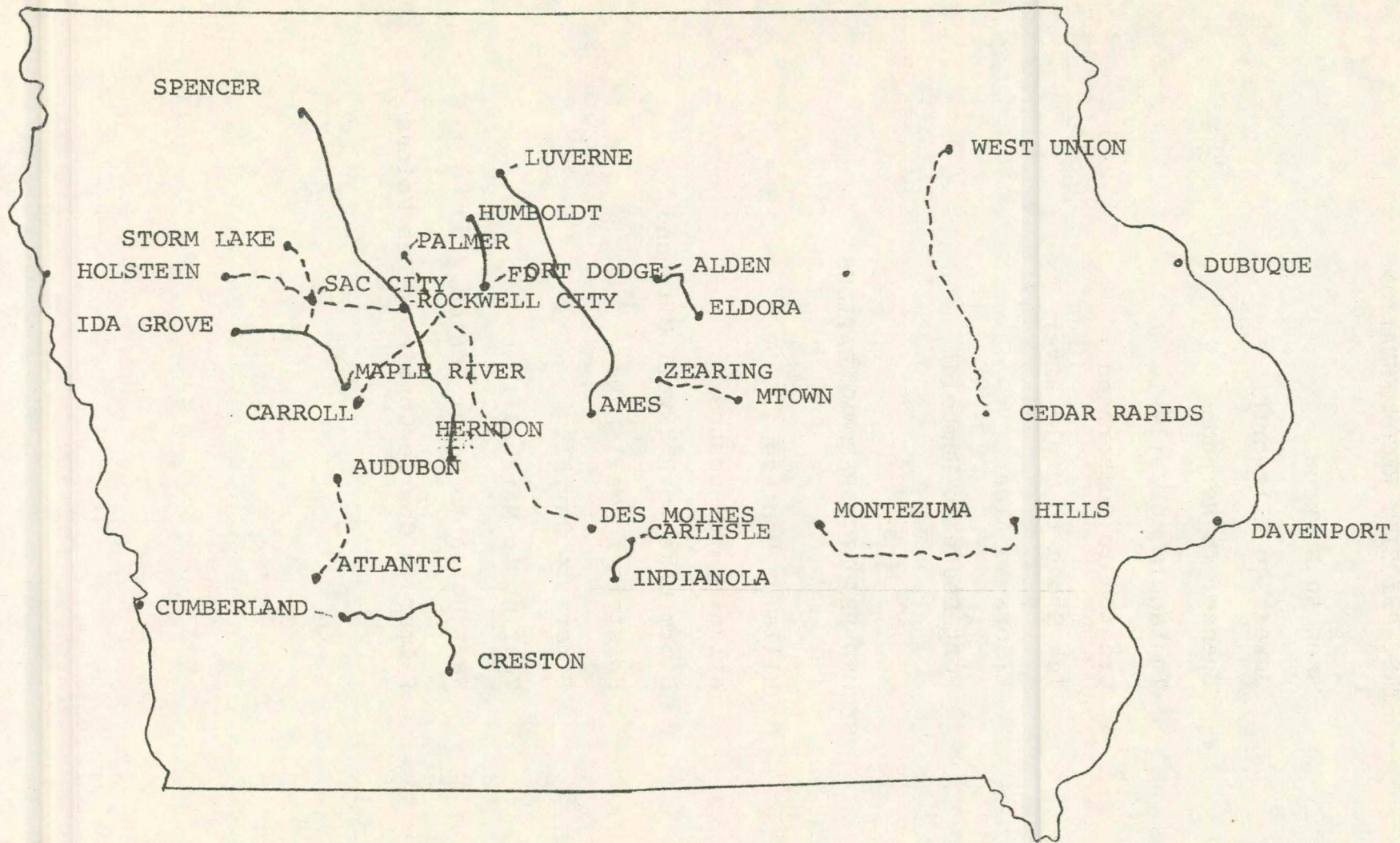
FIRST PRIORITY RECOMMENDATIONS

Ames to Luverne
Jewell to Ellsworth
Spencer to Herndon
Indianola to Carlisle
Creston to Cumberland
Ida Grove to Maple River
Eldora to Alden
Fort Dodge to Humboldt

SECOND PRIORITY RECOMMENDATIONS

Hills to Montezuma
Atlantic to Audubon
Storm Lake to Rockwell City and
Holstein to Wall Lake
Somers to Carroll
Zearing to Marshalltown
West Union to Cedar Rapids
Palmer to Gowrie/Gowrie to Des Moines

TASK FORCE RECOMMENDATION MAP



NUMBER ONE PRIORITIES ARE ILLUSTRATED WITH SOLID LINES

NUMBER TWO PRIORITIES ARE ILLUSTRATED WITH DASHED LINES

AMES TO LUVERNE

The Ames to Luverne branch line, operated by the Chicago Northwestern Railroad runs from Ames in the middle of Story County northerly approximately 70.3 miles to Luverne in the southwest section of Kossuth County.

The population served by this line is over 65,000 and includes the cities of Ames, Gilbert, Story City, Randall, Jewell, Kamrar, Webster City, Woolstock, Eagle Grove, Goldfield, Renwick And Luverne. Ames is also served by the main CNW line. The population of the service area other than Ames is slightly over 23,000.

There are thirteen elevators on this line. Since Ames is also on the main line, no attempt was made to gather information from that elevator. The Energy Policy Council Staff was able to contact nine of the remaining twelve elevators.

GRAIN SHIPMENTS

In 1973, the responding elevators shipped 8,198,000 bushels of grain. In terms of rail cars this would be 2,174 boxcars and 1100 hoppers. This represented 71% of the elevators grain business in 1973. The Jewell elevator, which has a capacity of 585,000 bushels, alone used 700 hoppers and shipped 2,450,000 bushels of grain. The nine responding elevators also shipped 3,400,000 bushels of their grain by truck. In terms of rail cars, this is equivalent to 1700 boxcars or 971 hoppers.

The responding elevators indicated that nearly 3,000,000 bushels of the grain they sent by truck would have gone by rail if the cars were available. These elevators further projected grain volume for the coming season to more than 13,850,000 bushel of grain.

The importance of this line is underscored by the fact that several of the stations on this line are now equipped to handle multiple car grain loading. The north central area of the state through which this line traverses is one of the heaviest feed grain and soy bean producing areas of Iowa.

Applying only the number of cars shipped by the responding elevators to the 34-car standard indicates that the line greatly exceeds that standard of viability. In addition to the grain traffic the EPC Staff identified, there is a considerable amount of other traffic (non-grain) generated by the 70 mile line and a substantial amount of overhead traffic.

CONDITION OF THE TRACK

According to a report submitted by the CNW, 58.1 miles of this line are restricted to 10 mph and 3 miles to only 5 mph due primarily to poor rail and some poor ties. The majority of the track is of lightweight rail. It is old and in very poor condition. Investigations by rail detector cars and visual inspection revealed 685 defective rails. Although these were changed, the line still experiences approximately 10 damaged rails per week.

The railroad has commenced a partial upgrade program on this line. Two miles of track south of Jewell were replaced with continuous rail and 40.2 miles of rail have been proposed to be replaced with this type of rail at a cost estimated by the company to be \$1,215,000. This would still leave approximately 18 miles of very poor and lightweight rail to be replaced.

The segment of line between Ames and Eagle Grove is presently classified suitable for 263,000 lb. loads, and the segment from Eagle Grove to Luverne is classified as suitable for 251,000 lb. loads. Although the dimensions of the rails theoretically permit the loads mentioned, trains must operate at

very slow speeds to reduce the impact on the very poor and lightweight rail. Even at this reduced speed many broken rails occur each week.

The CNW and affected shippers are anxious to rebuild this line to make it suitable for the 263,000 lb. loads at a line speed of 30 mph., but rapid achievement of the standard will not be possible without financial assistance.

RECOMMENDATION

Because of the extremely important role this line plays in transportation of grain in the state and because the past and projected performance of the shippers along the line, this line should receive the Council's consideration as a first priority project. By making this line capable of handling the large hopper cars through the several stations on the line able to handle them, more of the smaller 40' box cars will be free to provide service to a line with lower capacity and shipping potential.

JEWELL TO ELLSWORTH

This line, operated by the Chicago Northwestern Railroad (CNW), runs 3.4 miles east and west in the southeast corner of Hamilton County.

A 1.7 million bushel capacity elevator at Ellsworth is now separated from the main CNW line west of Ellsworth by an unuseable bridge which, if repaired, would connect that elevator to the main line. This elevator shipped seventy-five boxcars or 150,000 bushels of grain last year and would have shipped 500,000 bushels or 250 boxcars of grain if the rail had been in good repair.

The cost to repair this bridge is not expected to be large. The Ellsworth elevator said that although it would supply the funds needed to repair the track to the CNW main line, it would not pay for the bridge's repair.

An allocation to repair this bridge and complete this important connection to a major north-south line is believed to be reasonable, and funding is, therefore, recommended.

Also located in Ellsworth is another elevator with a capacity of 500,000 bushels that indicated it was one-half mile from the CNW line and, therefore, shipped all grain by truck. Accordingly, it is further recommended that a study be started to determine if it would be advisable to build a spur line to extend service to this second elevator in Ellsworth.

SPENCER TO HERNDON

The branch line of Spencer to Herndon is owned by the Chicago, Milwaukee and St. Paul Railroad (Milwaukee), and runs 101 miles on a northwest-southeast line through the heart of Iowa's grain-growing counties including Buena Vista, Pocahontas, Calhoun and Greene counties.

This line serves a population of 26,798 and includes the cities of Spencer, Webb, Marathon, Albert City, Varina, Fonda, Jolley, Rockwell City, Lohrville, Churdan, Jefferson, Herndon, and Greenville.

Webb	234	Rockwell City	2396
Marathon	447	Lohrville	553
Albert City	683	Churdan	598
Varina	140	Jefferson	4735
Fonda	980	Herndon	
Jolley	112	Greenville	117

Since Spencer is on a main line, and adjusted population figure of 16,520 gives a better description of the number of people served by the branch line.

There are 16 elevators on this and the Energy Policy Council was able to contact nine of them.

In 1973, the respondents shipped 18,502,000 bushels of grain or in terms of rail cars; 1218 boxcars and 4385 hoppers. This was 83% of their business.

The Albert City elevator shipped 11,190,000 bushels of grain last year in 3400 hoppers and has a projected volume this year of 9,000,000 bushels of grain.

These same respondents also shipped 1,418,241 bushels of grain by truck. In speaking in terms of rail cars this would have been 709 boxcars or 405 hoppers. This represented 17% of their business.

According to a report by the CMSPP, this line averages approximately 65 cars per mile per year. If the 34 car rule is used the line is justified in remaining open.

According to CMSPP data this line was constructed in the 1880's and 1890's and is generally 75 and 68 pound steel except for short stretches where heavier rail has been laid in. The load limit is 263,000 pounds for 13 miles between Herndon and Jefferson and 26 miles between Albert City and Spencer. The line is 62 miles long and currently has a load limit of 220,000 pounds.

During the past three years, the CMSPP has carried out extensive tie renewal and ballast programs on the line between Herndon and Spencer with the long range view of maintaining this line to 263,000 pound limits. The work was started at both ends working towards the middle and is currently between Herndon and Jefferson on the south end and between Spencer and Albert City on the north end. In those areas 263,000 pound loads can be handled. However, to maintain these limits, further work is required in these areas and heavier rail is needed north of Albert City. A continuing program of upgrading is required in the gap between Albert City and Jefferson to bring that portion of the line up to 263,000 pounds, and to increase the speed limits overall.

Extra work now in progress on the line between Herndon and Spencer includes 22.6 miles of new ballast, installation of 10,500 cross ties, and surface corrections on 25 miles, at an estimated cost of \$317,000. Nevertheless, the condition of the line today is such that 94 of the 101 miles are restricted to 10 mph. This has resulted in CMSPP being able to cover only half the line within the tour of duty of the train and engine crew. In years past, they were able to cover the entire line in a day, so the 10 mph speed restriction effectively results in a 24 hour delay to shipments on half of the line. This, of course, has an adverse effect on the car supply because of the slower movement.

Another clear indication of the marginal condition of the line is the fact that during the past year they have had a derailment on the average of once a month due to track conditions. This has delayed the movement of business on the line and further strained the car supply. They cannot continue to operate for long under such conditions. The proposed expenditure for work on the Spencer to Herndon line by CMSPP is estimated at \$795,000 and a breakdown is given below:

1. Relay 20 miles of 65# rail with second hand 85# rail	\$648,500
2. Surface 20 miles on new ballast	104,500
3. Install 3,000 cross ties	42,000
	<u>\$795,000</u>

INDIANOLA TO CARLISLE

The Indianola to Carlisle branch line owned by the Chicago, Rock Island and Pacific Railroad (CRIP), extends 11.3 miles through Warren county.

Towns being served by this branch line are Indianola, Carlisle, Ackworth, Mild, New Virginia and Spring Hill. The number of people served is 19,186 or an adjusted total of 10,334, not including the city of Indianola. Individual populations can be broken down as follows:

rural pop.	6,833
Indianola	8,852
Carlisle	2,246
Ackworth	111
Mild	561
New Virginia	452
Spring Hills	131
<hr/>	
Total	19,186

On this line there are three elevators and the Energy Policy Council was able to contact all of them. Of these three elevators, two responded and one said he hadn't shipped by rail for some time.

Of the two respondents, one shipped five boxcars and one shipped 600 hoppers or 10,000 and 2,100,000 bushels of grain respectively, representing 88% of their total business.

The total bushels of grain shipped by truck by these elevators was 301,200 bushels. In terms of railcars this would have been 151 boxcars and 86 hoppers.

According to a report by CRIP, there were 60 cars per mile per year used on this line in 1973. Using the cars per mile formula of the 34 car rule, viability of the line is justified.

A report from CRIP described the present condition of this branch line as minimal. The load limit is 200,000 pounds, and it is therefore embargoed to cars over 70 tons. The timetable speed is 10 mph. over the entire line with

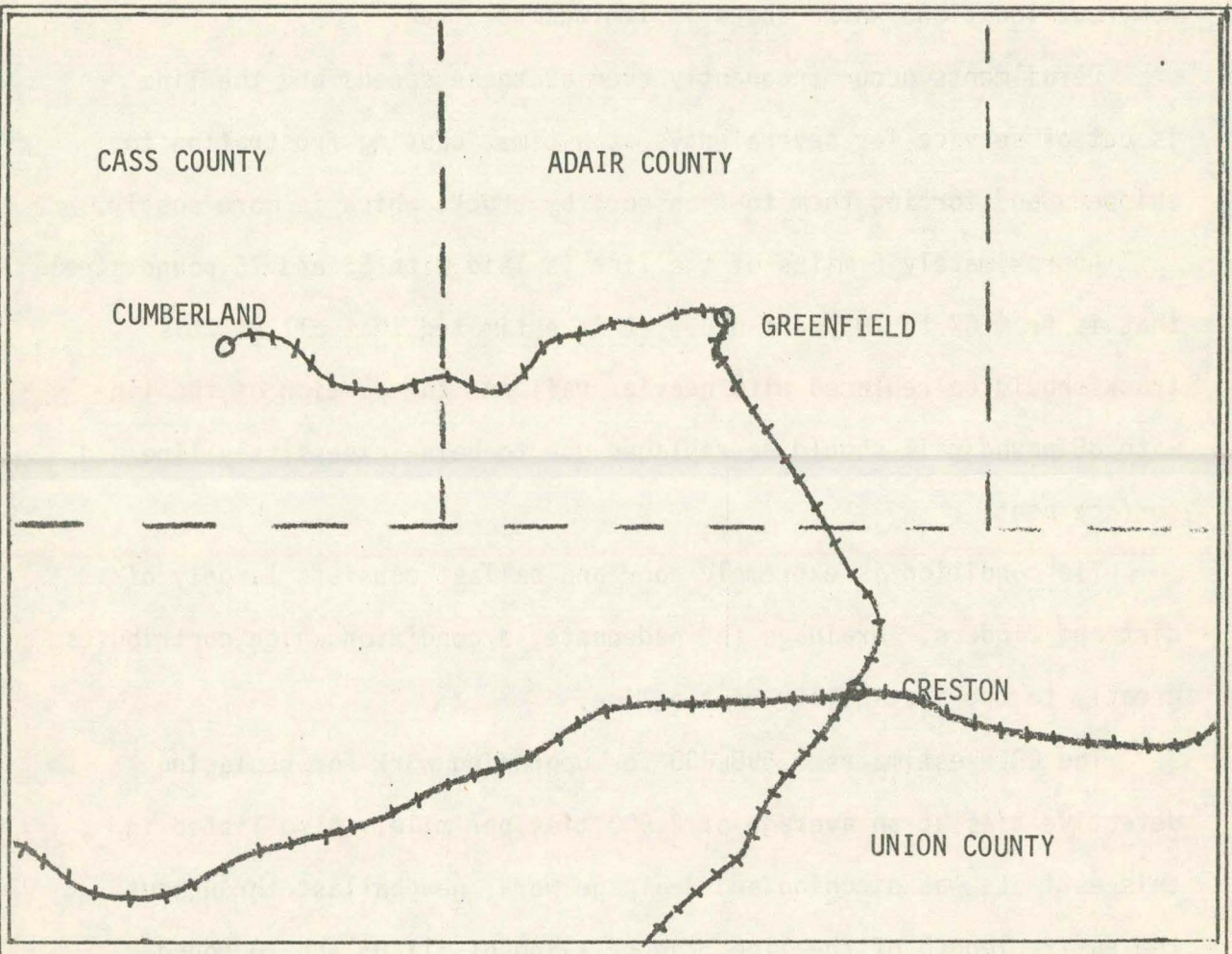
numerous locations where speed is limited to 5 mph.

Derailments occur frequently even at these speeds and the line is out of service for several days at a time, causing frustration to shippers and forcing them to transport by truck, which is more costly.

Approximately 5 miles of the line is laid with 65 and 75 pound steel that is from 67 to 79 years old. It is estimated that all of this track should be replaced with heavier rail and the portion of the line with 85 pound rail should be replaced due to being excessively line and surface bent.

Tie condition is extremely poor and ballast consists largely of dirt and cinders. Drainage is inadequate, a condition which contributes greatly to the instability of the line.

The CRIP estimates \$ 598,000 for upgrading work for replacing defective ties at an average of 2,900 ties per mile. Also listed in this estimate was ditching and drainage work, new ballast throughout the entire length of the line, the relaying of all 65 and 70 pound rail with good second hand 85 and 90 pound steel. Bridges on the line would be inspected and strengthened as necessary to accommodate heavier loading.



BURLINGTON NORTHERN'S CRESTON TO CUMBERLAND LINE IS A

RARE EXAMPLE OF RAIL COMPANY AND SHIPPER COOPERATION

CRESTON TO CUMBERLAND

The Creston to Cumberland branch line, operated by the Burlington Northern Railroad (BN), is 46.2 miles long and is located in southwestern Iowa starting in Cumberland, in the middle of Cass County, and traveling east to Greenfield in the center of Adair County, then southeast to Creston in Union County.

This branch line serves a population of approximately 21,500 which includes the towns of Cumberland, Bridgewater, Fontanelle, Greenfield, Orient, Creston, Massena, Grant, and Macksburg. The Energy Policy Council Staff contacted seven of the nine elevators on the Cumberland to Creston line. Five of these seven elevators used this branch line and responded.

In 1973, the responding elevators shipped 847 boxcars or 1,694,000 bushels of grain by rail. This represented 76% of their total business. That same year, these elevators shipped 776,000 bushels of grain by truck. This represents 388 boxcars or 222 hopper cars. These truck shipment accounted for the remaining 24% of the shippers' business.

The 847 cars used by the elevators on this line in 1973 represents only 18 cars per mile and falls far short of the necessary 1570 cars that would be needed annually to meet the 34 car per mile per year I.C.C. standard of viability. It should be noted; however, that the only information used in obtaining this figure was outgoing elevator traffic and, as such, is somewhat deficient.

Apparently, improvement of the line would generate a considerable amount of added business for the railroad -- not only from elevator truck business -- but from other businesses in the affected communities. Since this line was the subject of an abandonment study in 1973, a remarkable amount of citizen interest in retaining the line has developed. This, coupled with the high potential this marginal line offers, is the main reason Burlington Northern recommended this line for consideration by the Council for Railroad Assistance . To illustrate the high potential offered by this line, if 95% of the grain volumes projected for the current fiscal year by only the Fontanelle, Greenfield, and Cumberland elevators are shipped by rail, the 34-car standard will be exceeded.

CONDITION OF THE TRACK

According to the application by Burlington Northern, the condition of the Creston to Cumberland line is not good. Tie and drainage conditions have made it necessary to reduce speeds on this line to 5 mph in many locations, and, because of the often wet conditions in the spring and fall, it is sometimes impossible to make a scheduled round trip over the line. Light rail(66lb.) and bridge restrictions further limit the capacity of this line. Inspections by Commerce Commission Staff confirm this.

PROPOSED IMPROVEMENTS

The BN proposes to retie and ballast this line as funds become available. The company estimates that 1000 ties per mile will be required to bring this line up to suitable condition; approximately 2240 yards per mile of ballast are also estimated to be needed. The railroad company further proposes to ditch the line as ballasting progresses in order to achieve better drainage. Road crossings will be reworked to make them more satisfactory as the ballasting progresses.

The company's estimated expenditures for this project is as follows:

Sled and ballast (12 miles) --labor & material	\$156,000
Tie replacement (12 miles x 1000 ties/mile=12,000 ties)	120,000
Ditching by work train	<u>15,000</u>
Total expenditure on first 12 miles of line	\$291,000

Although this project would not increase the line's load limit, it would increase the speed limitations on the first 12 miles and enable the company to improve rail freight service to shippers in this important grain producing area.

RECOMMENDATION

Because of the high potential rail freight in the area served by this line, because it is a marginal line now in considerable danger of abandonment, and because of the demonstrated community and shipper involvement in this heavy grain producing area, it is recommended that this area be considered favorably as an applicant for state funds.

IDA GROVE TO MAPLE RIVER

The Ida Grove to Maple River branch line , operated by the Chicago Northwestern (CNW), is 38.1 miles long and extends from the center of Ida County, travelling east and south through Sac County, ending in the northwest corner of Carroll County. Excluding the town of Carroll, this line serves a population of nearly 10000 including the towns of Ida Grove, Arthur, Odebolt, Wall Lake, Breda, and Maple River.

The Energy Policy Council contacted five of the eight elevators on this branch line. Of these respondents, three shipped by rail as well as truck. In 1973, those respondents who used rail, shipped 927 boxcars and 53 hoppers or 2,040,000 bushels of grain. This represents 79% of these elevators' business in 1973.

Since less than 1000 cars originated on this line in 1973 and nearly 1300 cars would have been necessary to meet the minimum standard of the 34-car rule, the line's continued viability is in serious doubt.

TRACK CONDITION

Upon visual observation, the Ida Grove to Maple River branch line is in very poor condition. The line uses a very light rail (estimated a between 60 and 65 pounds), and has a mud ballast. Ties along the line are generally in very poor condition and sod has grown over many of them. There is a considerable amount of work and material necessary to adequately upgrade this line to a level capable of carrying the heavy grain traffic from this part of the state.

RECOMMENDATION

Grain shippers along this line handle large amounts of grain which are being diverted by truck or sent by truck to another railroad for shipment. Because of the poor condition of the trackage, there is a substantial inefficiency in utilization of available modes of transportation. Shippers along the line are projecting a marked increase in grain trade during the coming season because of a substantial reduction in the cattle feeding industry in that part of the state and because of the much larger increase in acreage due to the cutback in the ASCS set-aside program. A number of shippers have indicated a willingness to contribute to the upgrade project.

Because of the marginal condition of the line now, the very great potential of the very large grain producing area served by this line, and the demonstration of shipper interest, it is recommended that this line receive first priority attention by the Council.

ELDORA TO ALDEN

The Eldora to Alden branch of the Chicago, North Western Railroad runs northwest from Eldora through Iowa Falls and then west to terminate at Alden, a distance of 21 miles.

The major users of the line are the American Cyanamid Co., Iowa Limestone Co. and Alden Coop. Elevator in the Alden vicinity. All three are large operations. The American Cyanamid Co. says it ships 52,000 tons annually and receives shipments of 45,000 tons. The Iowa Limestone Co. says it ships 60,000 tons annually and receives 20,000 tons. The Alden elevator says it would ship 4 million bushels of grain by rail, if the cars were available. Together, this makes a potential of 4,800 63-ton boxcars inbound and outbound or 229 cars per mile per year.

At the present time, the line is embargoed against cars with a net weight over 63 tons or a gross weight over 80 tons. The embargo is required because of the deteriorated condition of the rails, ties, roadbed and bridge over the Iowa River. Because of poor track conditions, there have been a number of derailments.

Some of the shippers have initiated a share-the-cost plan for loaning the railroad the funds needed to improve the track, but no final agreement has been achieved. The railroad estimates the cost of upgrading the line at about a little over \$1 million.

The recommendation is that the council seek to bring these parties together so the track improvement will be done. A portion of the cost might be advanced by the state, if this is necessary to reach an agreement.

FORT DODGE TO HUMBOLDT

The Fort Dodge to Humboldt line is a 19 mile long line owned by the Chicago, North Western which has a promising potential if brought up to acceptable standards.

The major shippers on the line are the Corn Belt Cooperative Power Plant, a 665,000 bushel Farmers Coop. Elevator in Humboldt and the P. and M. Stone Co., Inc. of Humboldt.

The power cooperative faces a critical need for improved rail service to supply coal to its plant located five miles south of Humboldt. Corn Belt now is purchasing 52,000 tons of coal a year. It expects that to go up to 100,000 tons by 1977, when it no longer will be able to purchase natural gas. Corn Belt estimates its coal use will continue to rise about 7 to 10 per cent a year until it levels out at about 150,000 tons annually.

To handle these growing coal shipments and provide blending for high- and low-sulfur coal, Corn Belt needs to undertake a \$250,000 plant improvement. Quite naturally, it is hesitating to do this until it can be assured of continuing rail service.

The Humboldt elevator shipped 750,000 bushels of corn by truck last year. A spokesman for the elevator said 500,000 bushels of that would have been shipped by train, if service had been adequate. According to Burl R. Place, president of the Stone Company, they shipped 225,000 tons of rock by rail last year on this line and an east-west line through Humboldt.

In addition, Frit Industries recently has acquired a fertilizer company in Humboldt. An officer of the company says it expects to use as many as 1,000 carloads in and out of the plant with many of these shipments

over the Fort Dodge line.

Because of poor track conditions, the line currently is embargoed against cars over 210,000 pounds. The difficulties which shippers have encountered have been complicated by a shortage of these lighter cars.

The poor track conditions are a result of light rail, poor drainage, old ties and deferred maintenance. The result has been several derailments.

The recommendation is that the council meet with the local users of the line and try to develop an agreement where the state and local shippers join together to put up funds for improving the line with the Chicago, North Western repaying the loan from a portion of the revenues derived from the anticipated increased shipments.

HILLS TO MONTEZUMA

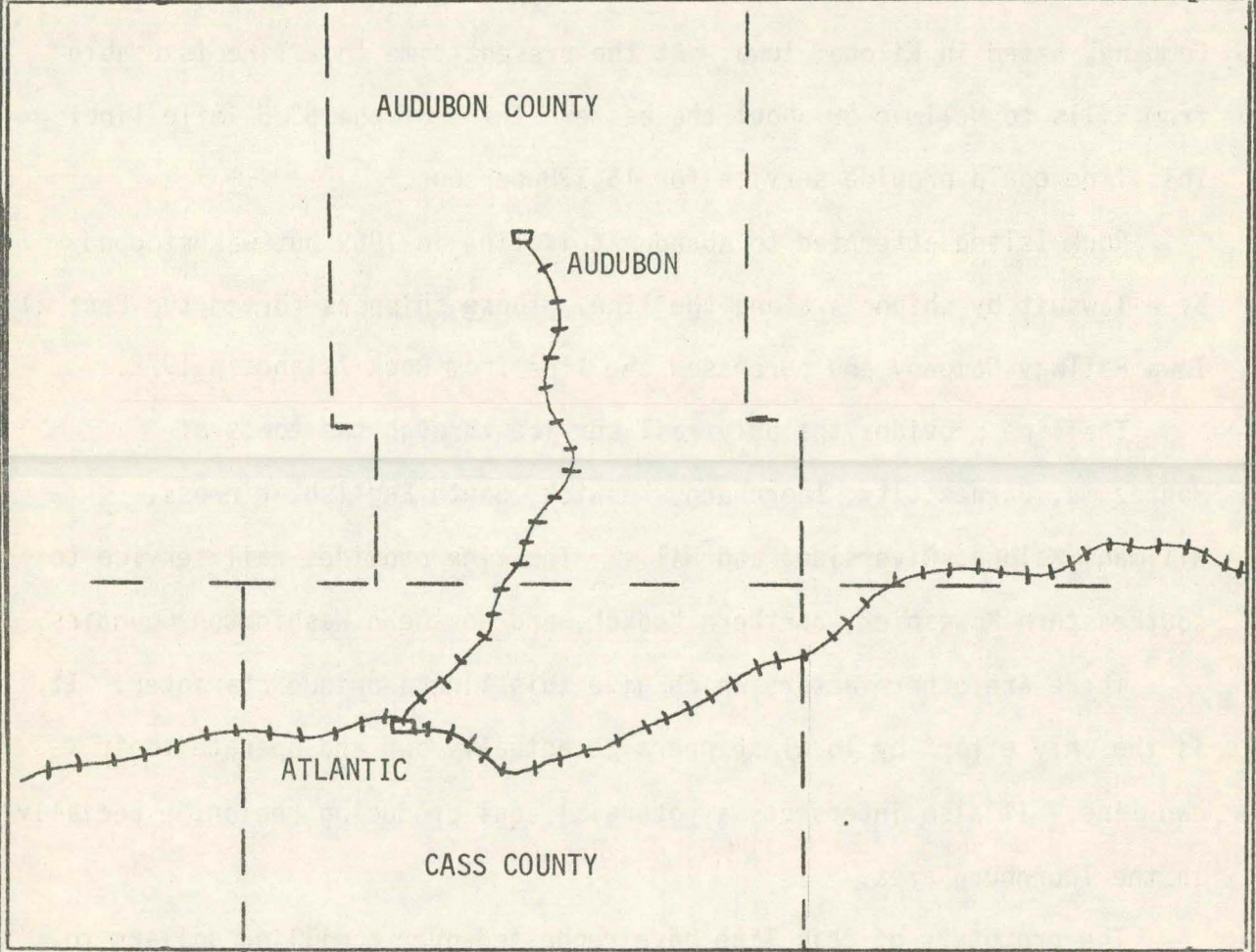
The Hills to Montezuma line is owned by the Central Iowa Railway Company, based in Kalona, Iowa. At the present time this line is usable from Hills to Wellman or about the eastern third of the 63.5 mile line. This line could provide service for 18,738 persons.

Rock Island attempted to abandon this line in 1969 but was stopped by a lawsuit by shippers along the line. Those shippers formed the Central Iowa Railway Company and purchased the line from Rock Island in 1972.

The line provides the only rail service through the towns of Montezuma, Barnes City, Thornburg, Keswick, South English, Kinross, Willman, Kalona, Riverside, and Hills. The line provides rail service to southeastern Poweshiek, northern Keokuk, and northern Washington Counties.

There are other factors which give this line a unique character. It is the only effort by local shippers to actually own and operate their own line. It also intersects a potential coal producing region, especially in the Thornburg area.

The promoters of this line have requested over a million dollars to repair the line. The task force, however, feels additional study on this line is merited before such a large outlay of State funds is undertaken.



IF ROCK ISLAND WERE TO ABANDON ITS ATLANTIC TO AUDUBON LINE

AN ENTIRE COUNTY WOULD BE LEFT WITHOUT RAIL SERVICE.

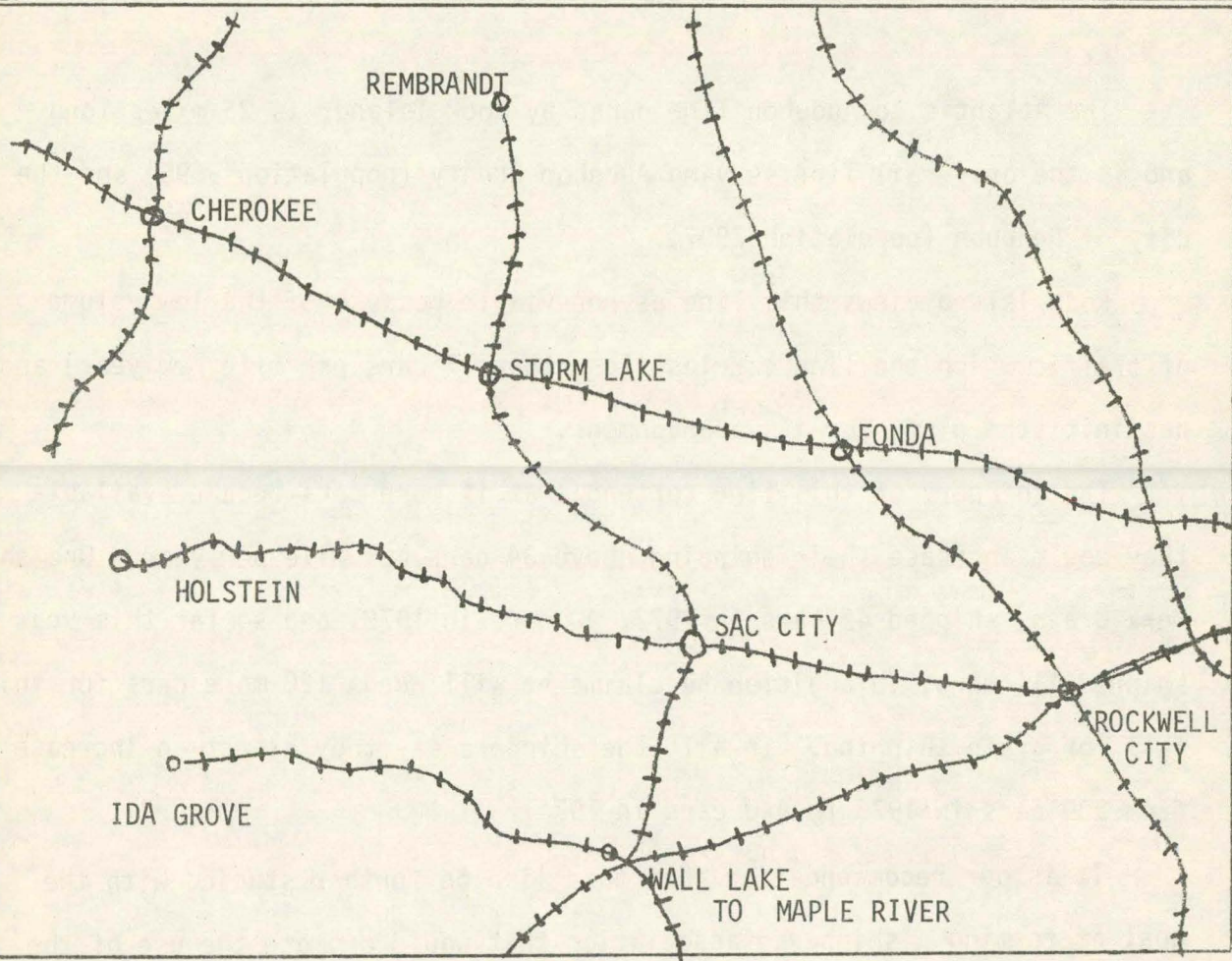
ATLANTIC TO AUDUBON

The Atlantic to Audubon line owned by Rock Island, is 25 miles long and is the only rail line serving Audubon County (population 9595) and the city of Audubon (population 2907).

Rock Island views this line as non-viable because of the low volume of traffic which the line carries (less than 17 cars per mile per year) and has initiated plans for its abandonment.

The shippers on this line contend that if more cars became available they could increase their shipping above 34 cars per mile per year. One shipper, Merk Grain, shipped 42 cars in 1972, 90 cars in 1973, and so far this year has shipped 111 cars; in addition he claims he will need 120 more cars for this fall for grain shipping. In all, the shippers say they expect an increase from 280 cars in 1973 to 440 cars in 1974.

It is our recommendation that this line be further studied with the goal of forming a shippers' association that would promote the use of the line. If this were done and the outlook for the line turned around the State should consider a right-of-way improvement project here.



THE HOLSTEIN TO WALL LAKE (CHICAGO, NORTH WESTERN) AND STORM LAKE TO ROCKWELL CITY (MILWAUKEE) LINES OFFER AN OPPORTUNITY TO CONSOLIDATE ELEVATOR FACILITIES AND RAIL SERVICE.

HOLSTEIN TO WALL LAKE
AND
STORM LAKE TO ROCKWELL CITY

The Storm Lake to Rockwell City line (Milwaukee) and Holstein to Wall Lake line (Chicago North Western) serve an area of about 30,000 inhabitants and form a vital transportation link for Sac City and Sac County. The total length of the lines is over 80 miles but current traffic is light or nonexistent.

Chicago, North Western was unsuccessful in an effort to abandon the line between Holstein to Sacton in 1972, but has refiled an abandonment petition. The Milwaukee has discontinued service on the continuation of this line from Storm Lake to Rembrandt and, our office has been informed, is considering filing for abandonment of the 38.3 mile Storm Lake to Rockwell City route.

If both these lines are abandoned, this would leave a large void in rail service for this area. The line itself is not in good condition with many drainage problems and rough track. We would like the opportunity to investigate shipper cooperation in the formation of an association in that area with the possibility of using a central site for a large multi-car loading facility.

It would not be our intent to put State funds into such a facility but only to encourage shipper cooperation and aid in restoration of the aging track.

SOMERS TO CARROLL

The Somers to Carroll line is owned by Chicago and North Western Railroad and services a population of about 12,000 in northeastern Carroll and southeastern Calhoun counties. North Western earlier filed for abandonment on the line from Harlan to Ft. Dodge but suspended its petition on the Harlan to Carroll section after users in Harlan organized and made an effort to increase use of the line.

The shippers between Carroll and Somers currently are in the initial stages of a similar attempt to promote use of the line and forestall abandonment.

The role of the State in this area is not clear and merits further investigation. The shippers contacted by our office have indicated difficulty in obtaining cars from the North Western company and have expressed the firm belief that traffic over this line will substantially increase in the near future.

ZEARING TO MINERVA JCT.

The Zearing to Minerva Jct. line is a section track of a line which runs from Roland to Minerva Jct. This branch is owned by the Chicago, North Western Company. It lies in a heavy crop production area. The elevator at Roland has announced plans to relocate on the Chicago, North Western mainline. This would seem to provide the rail service requirement for major users west of Zearing. The track is 19 miles in length and services 4,705 persons. The current traffic on the line is 26 cars per mile per year.

There is good potential on the line if cars are available to ship grain; shippers on the line indicated, when contacted by our office, that they would have shipped over 900 more cars of grain last year. There is a bad track problem in this area which is the result of a sod build-up between the rails which in places forms mounds higher than the track.

Due to this track condition, this would be a very expensive project. We feel the State should enter into immediate negotiations with the railroads and shippers along the line from Zearing to Minerva Jct. to see if suitable agreements might be reached. One approach would be the abandonment of the line west of Zearing in return for the rail company's cooperation in the improvement of the remainder of the line.

We hope that some arrangement can be made to provide better service on this line at a cost that is reasonable. If this can be done and funds are still available we would anticipate it would qualify for a portion of the \$3,000,000.

WEST UNION TO CEDAR RAPIDS

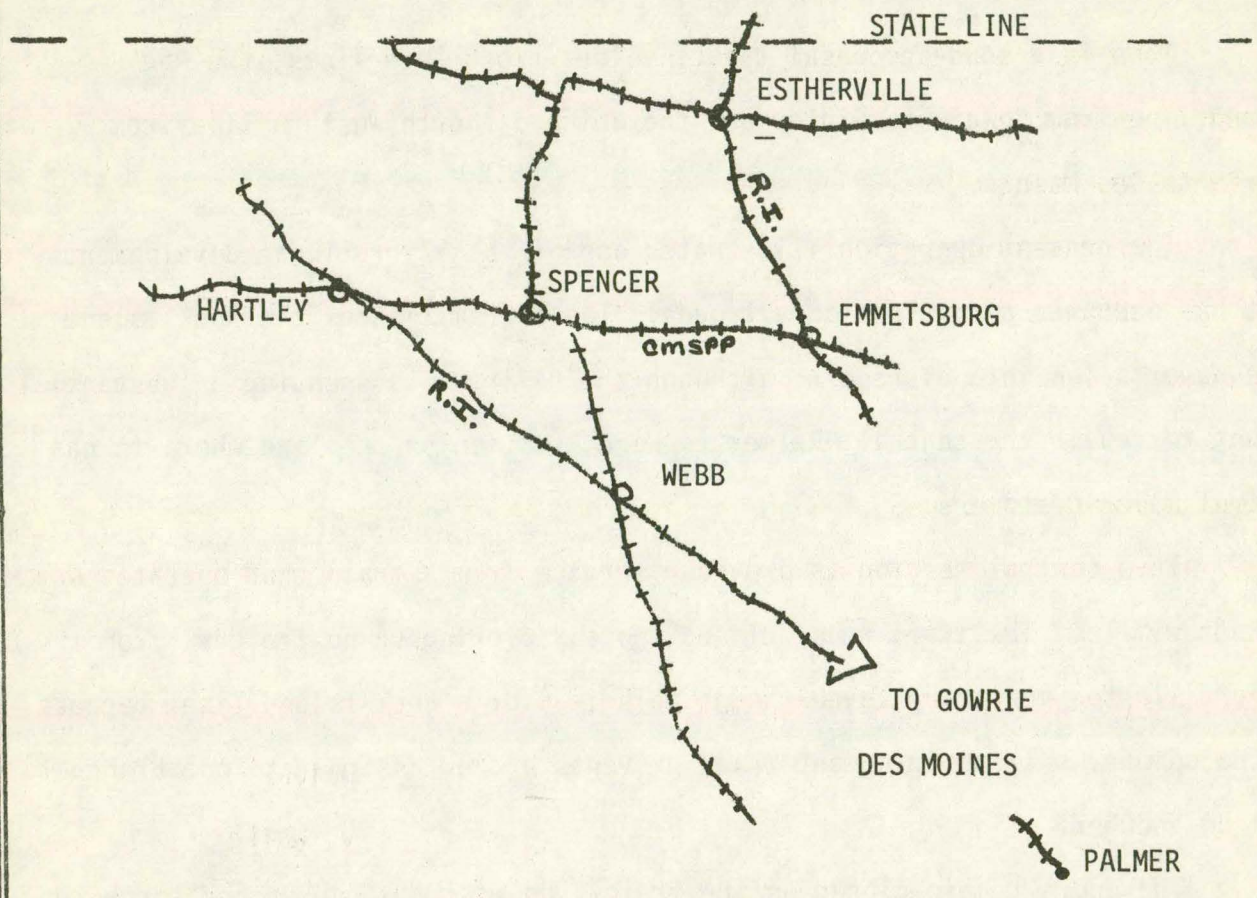
The West Union to Cedar Rapids line is more than 80 miles in length and serves 33,500 inhabitants in the communities of West Union, Donon, Randalia, Maynard, Oelwein, Hazelton, Independence, Rowley, Walker, Center Point, and Hiawatha.

The line is in poor condition. It is embargoed on cars over 190,000 pounds. The line is made up of many stretches of 60 pound steel. Drainage is poor, and the ties are weak in many places.

The line currently carries 31 cars per mile per year, mainly grain shipments. The Rock Island currently lists it as not viable because of the high cost of bringing it up to adequate condition.

Most of shippers contacted by our office would have used the existing line if boxcars had become available last fall and plan to use it more if the car shortage is alleviated after harvest this year. A few shippers have already given up on rail service; such as the grain elevator at Walker which now operates its own truck fleet.

The need in this area is for the State to investigate the possibility of bringing shippers together with the railroad to improve service and promote the use of the line. If this is done and state funds are available, they could be used to help underwrite the needed track improvements.



THE ROCK ISLAND IS TRANSPORTING GRAIN OVER A NORTHERN ROUTE INSTEAD OF UTILIZING TRACKAGE TO THE SOUTH. THE SOUTHERN LINE, WHICH WOULD USE PORTIONS OF A CHICAGO, NORTH WESTERN LINE, WOULD MEAN SAVINGS ON TIME, ENERGY AND ECONOMICS.

PALMER TO DES MOINES

This is a study proposal that involves two branch lines, the Rock Island line from Gowrie to Sibley and the Chicago, North Western line from Gowrie to Des Moines.

The present operation illustrates one of those irrational developments that has occurred among Iowa's railroads. The extremities of the Rock Island line have fallen into disrepair, although the railroad is spending a substantial amount to repair the central, Palmer to Webb, section of the line where it has several major customers.

This central section is provided service from a train that operates out of Estherville. The train runs "closed doors," picking up no freight, from Estherville to Emmetsburg, even though this is over a Rock Island line, because of the company's labor agreement which prevents a crew assigned to one branch to work on another.

The doors remain closed as the train runs west to Spencer and south to Webb over the Milwaukee railroad tracks. The result of this meandering trip is that the train travels more miles with its door closed than it does with them open for business.

There would be time, economic and energy efficiencies if the Rock Island served this area from the southern end of the branch at Gowrie.

There would be obstacles to such a solution. The section from Palmer to Gowrie has not been used for several years and the track is in poor shape. The Rock Island has an old trackage agreement with the Chicago, North Western to travel that railroad's track from Gowrie to Des Moines, but this may have to be renegotiated if the Rock Island seeks to reopen this service.

The recommendation is to contact the Rock Island and Chicago, North Western to see if some better method can be devised to provide rail service in this area.

SUPPLEMENTARY STUDIES

To assist the members of the Council in their review and consideration of the foregoing recommended priorities, the following three studies have been developed by members of the Rail Study Group.

The first, Railroad-User Agreements, outlines existing agreements which railroads have already negotiated with shippers on those lines the railroad serves. These agreements indicate several possible areas of negotiation which the Council may wish to explore in its development of individual assistance programs for each project finally approved.

The second, Railroad Energy Efficiency, explores the energy efficiencies achievable through use of rail service as opposed to other available transportation modes. Particular attention is given to the increased efficiency attainable through utilization of the jumbo hopper grain car. A case study -- the Ames to Luverne proposal -- is also set forth.

The third study, reviews the status of pending applications to abandon Iowa branchlines. The criteria utilized by railroads in justifying the requested abandonment are also identified.

RAILROAD - USER AGREEMENTS

BACKGROUND

Section 9 of Senate File 1222 provides that the Energy Policy Council may grant "financial assistance" to railroad companies for the purpose of upgrading branch lines serving Iowa. This type of outside financial assistance arrangement is now new to Iowa railroads.

In recognition of the economies inherent in using rail service, several shipper groups throughout Iowa have entered into agreements with the railroads serving their businesses whereby the shippers provide interest free capital to the railroads for the purpose of rehabilitating the railroads' physical plant. In these agreements, the railroad concerned has agreed to repay the shippers who have contributed based on the freight generated on the line after the repair has been completed.

These agreements provide valuable models to the Energy Policy Council in their development of the two- and three-party agreements which will integrate the terms of the grants of financial assistance to the railroads.

Two basic user contribution agreements have been studied: the Chicago Northwestern Agreement and the Rock Island agreement. Both agreements have been formulated in contract form. Although they differ significantly in the pay-back arrangements, these plans have several common elements which will now be reviewed briefly.

Contribution by Shippers

Although the method of contribution of the capital for the railroad upgrade project is most often a lump sum, due soon after the agreement is signed, one agreement contained a schedule for contributions extending over a two-year period. Where large groups of shippers have been involved, one or two shippers have served as conduit for capital contributions from other shippers

to the railroad and, as will be noted later, for repayments from the railroad to the contributing shippers. The amount of the contribution is claimed to reflect a reasonable estimate of the cost of the project or a stated portion of the project.

The Upgrade Project

In addition to the location and distance of the project, the construction standard is indicated in the agreements. The agreements studied indicated only one weight standard (i.e. 263,000 lbs. for unit trains).

The three Chicago Northwestern agreements provided that the upgrade work would be completed within six "working-weather" months after the funds are provided. This excludes November through March and any other period during which weather will not permit Northwestern crews to work the track. The Rock Island agreement, which dealt with a longer line, restricted the work period to the "appropriate seasons" of 1974 and 1975.

Any time commitment is generally subject to acts beyond the control of the railroad such as "acts of God", labor disputes, or material shortages.

Other Provisions

In some of these agreements, the railroad assumes the responsibility to maintain the line in the agreed condition during the period of the payback agreement. This provision should also extend this railroad responsibility for that period during which traffic on the line justifies its maintenance.

The railroads involved in the agreements studied have agreed to maintain the records concerning the upgrade project and subsequent freight generated on that line and to provide to the shippers concerned the right to inspect those records.

All agreements studied had a provision indicating all interest, title or claim in the line and improvements would remain solely with the railroad.

Payback Provisions

The CNW Plan

Upon completion of the upgrade project, CNW most commonly agrees to publish tariffs providing special allowances to the contributing shippers for all loaded cars received or shipped by each shipper in the group. In every CNW agreement reviewed, the schedule of allowances has been the following:

<u>Railway Co. share of total line-haul Revenue per car</u>	<u>Allowance per car</u>
\$100 to \$199	\$10
\$200 to \$299	\$20
\$300 to \$399	\$30
\$400 to \$499	\$40
\$500 or over	\$50

The CNW has placed a 10-year maximum period for the annual publication of this special tariff provision or until every shipper is repaid.

These allowances are paid directly to shippers involved on an annual basis until the entire amount advanced by that shipper is repaid. In this regard, CNW could sever the relationship with a member of the shipper group as that member's individual contribution was repaid based on freight generated by that particular shipper.

Rock Island Plan

In the Rock Island agreement studied, the railroad agreed to commence repayment at a date certain, regardless of the progress on the construction project. Payments were to be made on a monthly basis rather than annually. Unlike the CNW agreement, the basis for Rock Island repayment was not limited to freight generated only by the shippers involved in the agreement but extended to all freight. A further difference between the two methods of repayment schedule is that, under Rock Island's plan, the revenue attributable to each car is not considered. The repayment of the advances was to be at a

flat rate of \$25.00 per loaded car traveling in a specified direction on the line, regardless of shipper.

As with the capital contribution, repayments to the members of the shipper group from the railroad were channelled through two shippers in the group to complete payment.

Proposals for EPC Agreement Provisions

After reviewing these plans, several provisions are recommended for inclusion in any agreement formulated for the Railway Assistance Plan:

1. In establishing the amount of contribution by the shippers and/or State for the upgrade project, a specific breakdown of the reasonable estimates of the cost of each element of the project should be provided.

2. In addition to a weight standard for the construction project, a speed standard should also be specified (e.g. D.O.T. class #2 -- up to 25 m.p.h.).

3. Commencement of work on the project should be required upon completion of the agreement, upon payment of a part or all of the financial assistance, and/or a date certain.

4. On longer lines, where the entire project may well extend beyond one construction season, it would be appropriate to set forth in the agreement what portions of the line are to be upgraded first, with time schedules imposed on these sub-projects.

5. Although this is covered by statutory law, there could be a provision clearly stating that shippers not joining in any contributing shippers' group will not be subject to any restriction on availability of service on the line.

6. If, after completion of the upgrade project, there is a breakdown in the service on the line for an extended period of time (e.g. three days), part of the freight on another line that would have gone over the repaired line but for the breakdown could be considered in determining the repayment amount.

7, The greatest area for innovation in the proposals is the repayment provisions. All cars of freight should be considered in the determination of repayment amounts -- not just those generated by the shippers involved. If the revenue per car is to be considered in determining the repayment allowance, as with the CNW proposal, it may well be appropriate to adjust the schedule to a more realistic reflection of current reasonable revenue per car standards.

Because a primary objective of the Railroad Assistance Plan is to improve the utility and utilization of Iowa's branch lines, incentives should be given to the railroad to rapidly complete the project and to make rolling stock available for shippers on the line.

For example, the railroads total obligation could be reduced by a certain amount for every car of freight originating in or destined for the service area of the line. The railroad would be obligated to pay this entire amount less an amount which reflects the railroad's effort to complete the project and provide equipment to the shippers.

For more marginal lines, the ~~thirty-four car rule~~ could be used to provide the basis for this incentive, although the peculiarities of cash line and its service area should be considered in formulating a realistic, yet effective, restitution formula.

This proposal assumed a middle position between the out-right grant and the payback arrangement. Depending on the railroad's ability and inclination to improve service on the line, the capital supplied by the State will become a grant or a loan or some combination of each.

RAILROAD ENERGY EFFICIENCY

It is not by accident that the Energy Policy Council was selected by the 65th General Assembly to administer the Railroad Assistance Act. Transportation, including railroads, consumes 25 per cent of the nation's energy.

According to 1970 data, railroad locomotives consumed 3.8 billion gallons of fuel in moving 777,000 million ton-miles of intercity freight. Motor trucks consumed about 8.2 billion gallons of fuel to move 412 million ton miles of intercity freight. In other words, railroads in using one-half the fuel of trucks moved almost twice as much tonnage. From these figures, it is evident that railroads are a singularly efficient method of transportation and represent one of the most attractive areas in increasing energy saving.

Factors in Fuel Use

The fuel consumption for freight train movements on mainline track varies from .6 to as high as 6.0 gallons per 1000 net ton miles (a gallon/net ton mile is the amount of fuel it takes to move one ton of freight one mile and is usually abbreviated gal/1000 NTM). The exact amount depends largely upon the type of freight train, its speed, and the grade of track (level ground as opposed to hilly terrain).

A study done by the Battelle-Columbus Laboratories in Ohio for the American Association of Railroads in August, 1971, showed an average mainline rail fuel consumption value of 3.43 gal/1000 NTM. The rail industry as a whole had an average fuel consumption value of 4.83 gal/1000 NTM which included branch line movements which are less efficient than main line operations, switching movements and fuel losses.

Train movements which are made with 25,50, or 100 units of 100-ton hopper cars, all carrying the same commodity are the most energy efficient. The fuel consumption of a unit train making one round trip to the Gulf (this assumes a full load one way with an empty backhaul) ranges from .9 to 2.7 gal/1000 NTM,

depending on the grade.

The speed of the train also can affect fuel consumption. At about 30 m.p.h. a unit train would require from .33 to 1.9 total locomotive horsepower for every gross ton pulled (gross ton equals the empty weight of the cars and locomotive plus the net tons of freight carried). In a trip which has significant grades in both directions, a unit train might require 6000 horsepower to haul 4000 gross tons, a ratio of 1.5 horsepower/gross ton. At higher speeds additional horsepower is required. Thus, for a high speed freight train which averages over 40 m.p.h., a ratio of horsepower to gross tons might range from 3.0 to 3.7. If a train were to average 60 m.p.h. in the mountains, it might be necessary to use as much as 6 horsepower per gross ton hauled. The higher ratios, of course, decrease fuel efficiencies.

Reasons for Hopper Car Efficiencies

There are several reasons why unit train movement of 100-ton hopper cars use less fuel per net ton mile:

1) Hopper cars offer less air resistance than most other types of freight cars and the use of similar sized hopper cars further reduces the air resistance.

2) The average speed for unit trains is considerably less than for other freight trains which require a smaller ratio of horsepower to gross tons.

Air resistance also increases exponentially with increased speed.

3) Hopper car unit trains have a greater ratio of net tons hauled to gross tons carried on a round trip basis than exists with other types of trains. For example, a 100-ton hopper car, which weighs about 32 tons empty, has a round trip net to gross ton ratio of $100/164 = .61$ (in this case, round trip gross tons equal the tons hauled, 100, plus the weight of the car one way or 132 tons plus the weight of the car, 32 tons, for the empty backhaul for a total of 164).

A 40-foot boxcar (which weighs about 29 tons and carries a 50-ton load would have a ratio of only $50/108 = .46$ which is considerably less than for a hopper

and requires additional horsepower to compensate for the difference.

Baumel Study

To gain a better understanding of fuel efficiencies on branch line operations, a formula was adapted from the Federal Railroad Administration study of alternative grain transportation, completed by Phillip Baumel et. al. at Iowa State University. Two of the factors were taken as constants in the formula since sufficient engineering data could not be found in the short time available for this report. Nevertheless, the formula below provides at least a working indication to compare the operation of branch lines.

$$\frac{(\text{locomotive H.P.}) (\text{load factor of } .60)}{(\text{gross tons hauled}) (\text{speed})} \times \frac{(\text{gross ton-miles})}{(\text{net ton-miles})} \times \frac{(.058 \text{ gal})}{(\text{H.P./hr})} = \text{X gal/NTM}$$

For comparison to truck efficiency, the formula below was used for an 810 bushel tractor-trailer combination (gross weight is 36 tons):

$$\frac{(1 \text{ gallon})}{(4 \text{ miles}) (24 \text{ net tons})} \times \frac{(\text{round trip } 2 \text{ miles})}{(\text{one way } 1 \text{ mile})} = .0208 \text{ gal/NTM}$$

For a 25 hopper car unit train with a ratio of 3 horsepower to 2 gross tons at 30 M.P.H., the fuel efficiency is estimated at:

$$\frac{(3 \text{ H.P.}) (.60)}{(2 \text{ gross tons}) (30 \text{ MPH})} \times \frac{(1.84 \text{ gross ton-miles})}{(1 \text{ net ton-mile})} \times \frac{(.058 \text{ gal})}{(\text{H.P./hr})} = .0032 \text{ gal/NTM}$$

In this comparison, the hopper car unit train would be 6.5 times more energy efficient than the tractor-trailer truck.

The consumption rate of 3.2 gal/1000 NTM obtained in the above equation (.0032 gal/NTM X 1000 = 3.2 gal/1000 NTM) is about the same as the figure reached by the Battelle report of 3.43 gal/1000 NTM.

The same unit train with a ratio of 1 Horsepower to 1 gross ton hauled at 30 MPH would obtain an even greater efficiency.

$$\frac{(1 \text{ H.P.}) (.6)}{(1 \text{ gross ton}) (30)} \times 1.84 \times .058 = .0021 \text{ gal/NTM}$$

(In this example, the train is 10 times more energy efficient than a

tractor-trailer truck.

At ten miles per hour, the efficiency would be reduced to .0064 gal/NTM which is only 3.25 times as efficient as trucks. Thus, slow orders of 10 mph can substantially reduce the overall energy efficiency of train operations.

Had this been a unit train of 50 box cars (carrying the same tonnage of freight as the 25 hoppers) at 30 MPH, the ration of gross ton-miles to net ton-miles increases from 1.84 to about 2.3 which also decreases fuel efficiency as shown:

$$\frac{(3 \times .6)}{(2 \times 30)} \times 2.4 \times .058 = .0042 \text{ gal/NTM}$$

= 4.95 times the efficiency of trucks

The 40-foot boxcars therefore would consume an estimated 1.3 times the energy of the hopper-unit train.

Some Trains Inefficient

Despite these factors favorable to rail transportation, branch lines often operate at efficiencies less than that of trucks. This may come about because of poor track conditions, slow speeds, and the use of short trains made up of only 4, 5, or 6 cars.

Using the above formula, it can be shown that 4 boxcars pulled by a 1500 horsepower diesel is about one half as efficient as a 36-ton semi-truck (24 net tons). On a four-boxcar train, the ratios of horsepower to gross tons and gross ton-miles to net ton-miles are extremely high (about 3.16 and 3.75 respectively.) The same values for hoppers would be 1.5 and 1.84.

Under the existing conditions on those branch lines where speeds are limited to 10 mph, the breakeven point for comparable efficiencies of train and trucks is about 8 box cars (400 net tons hauled). This does not include the fuel consumed for switching and sidetrack operations, which tend to reduce the value even further.

It should be noted, however, that if trains only a few cars long on a branch line are assembled into longer trains when they reach the main line, the energy efficiency for an entire trip may be superior to that achieved by trucks.

Ames to Luverne

By way of example, grain shippers at six stations on the CNW Ames to Luverne branch line now have multiple car loading capability. Because the line has a slow order of 10 mph on 58 of the 70.3 miles and because the condition of the track limits the quality of service, shippers moved 2,348,000 bushels of grain by boxcar (7.35 million by hopper). Had the shippers been able to move all their grain by hopper car unit train, approximately 139,000 gallons of fuel might have been saved last year.

The efficient management of the hopper unit trains could have freed the 98 boxcars. The 98 boxcars used in carrying the 2.35 million bushels of grain could be replaced by 28 hoppers making two trips each month.

By rebuilding this line to 263,000 lb standard at 30 mph, other lines can be dovetailed in producing the same net increases in fuel efficiency, shippers costs, and car availability. By rebuilding the line, greater competition can be developed with barge shipments on the Mississippi.

Previously, it was thought that movement by water was slightly more efficient than by rail. However, this comparison was made on the basis of industry averages which distort the comparison because the rail average includes all types of freight movement including high speed freight and branch line operations which are less efficient than unit train movement. The rail alternative for high-volume movement of commodities such as coal and grain by barge is the unit train.

When a fuel comparison is made between the unit train and the barges, the rail operation is found to be less energy intensive. Using similar equations as

for the truck-rail comparison a unit train, making a round trip from Dubuque to New Orleans would consume 1.79 gal/1000 NTM while the barges would require 3.60 gal/1000 NTM. There is little or no grade involved in rail movement from Dubuque to New Orleans and the rail route to the export point is more direct than the winding route followed by the Mississippi River.

From the considerations outlined above, the following conclusions can be made:

Conclusions

1) Hopper cars provide a better fuel efficiency than box cars under similar conditions.

2) Trains need to operate with about eight or more cars to perform with higher efficiencies than trucks;

3) Improving speed limits is an important factor in achieving better fuel efficiencies on branch lines.

These conclusions, however, are dependent on other factors; improving branch lines roadbed does not mean freight will automatically be moved more efficiently. If a stretch of track is improved so that hoppers can be used, there is no guarantee the cars will be available when needed or that the shippers have the facilities and the freight to warrant use of the unit train.

In terms of energy efficiency alone, there would be advantages in running 25, 50 and 100 hopper car unit trains at 30 mph. These are, of course, other considerations, such as the public interest in adequate rail service and the social impact of railroad abandonment.

ABANDONMENT STUDY

Because their service is peculiarly endowed with the public interest, railroads may not extend and withdraw the availability of that service automatically as business conditions change. Applications to abandon this service must be made to the Interstate Commerce Commission before service is discontinued. Only after a demonstration to the I.C.C. that the interest of the public will not be adversely affected by the proposed abandonment will that abandonment be permitted.

Over the past several years, the number of abandonment applications has increased substantially throughout the country as the trucking industry assumed a greater portion of the freight traffic, as the interstate highway system and improved air service provided a more attractive mode of passenger transportation, and as the cost of maintaining the thousands of miles of rail line became prohibitive.

Since the necessary I.C.C. standard for abandonment became easier to meet, applications have become backlogged. To remedy this, the I.C.C. adopted an abbreviated procedure for abandonment whereby summary abandonment (i.e. without hearing) is permitted upon a demonstration by the railroad that the line in question generated less than thirty-four cars of freight per mile per year.

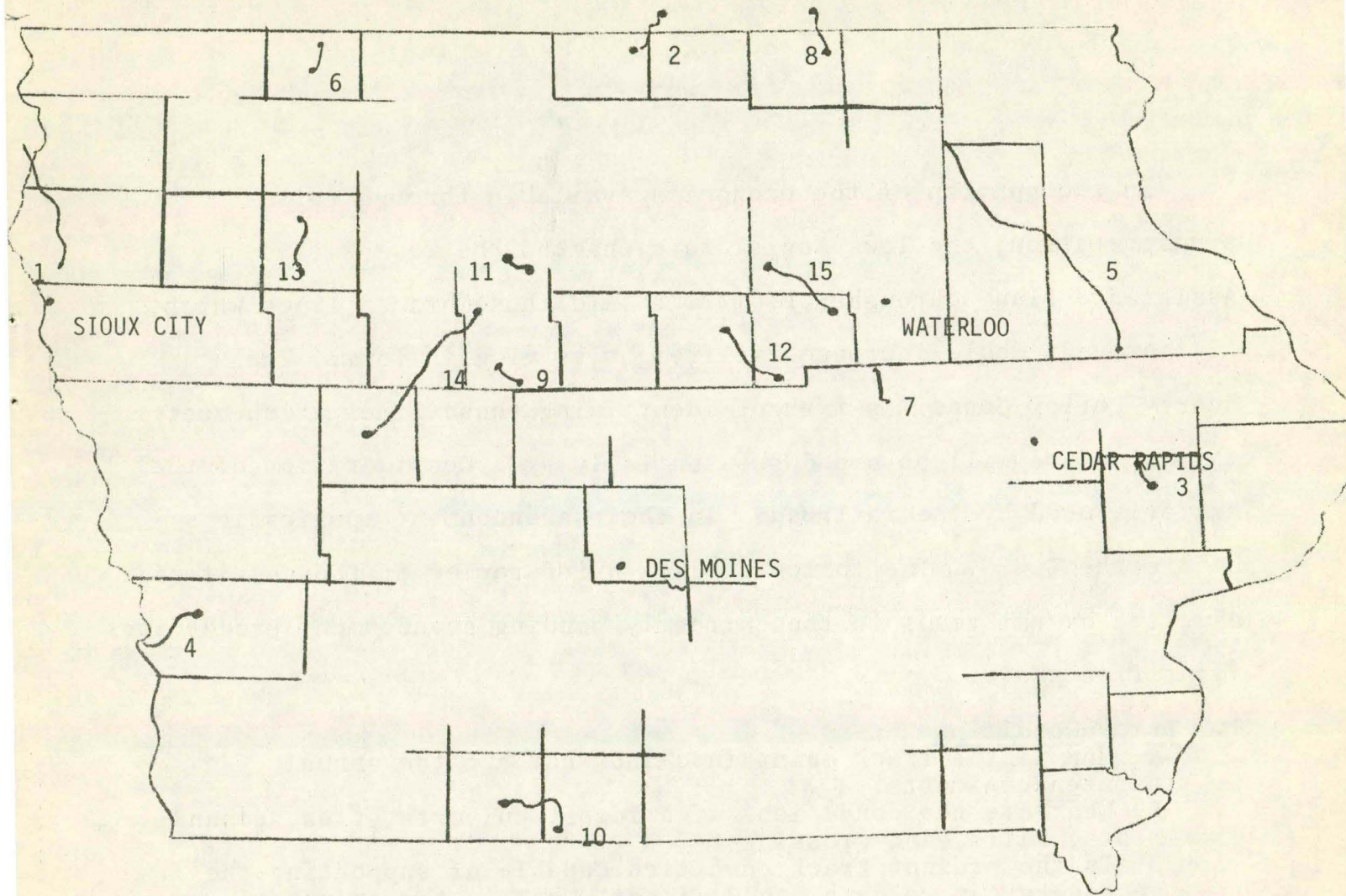
In 1972, the railroad companies serving Iowa projected that, if the maintenance and construction costs and trucking's market share continued to increase as it had, abandonment of Iowa's

branch lines would continue until Iowa's rail system would consist of little more than main lines by 1980.

Due in large measure to the energy shortage, there has been a renewed interest -- both public and private -- in rail service. This fact, coupled with the recent delays in the courts over the Thirty-Four Car Rule and the requirement of environmental impact statements, has accounted for a reduction in the rate at which abandonment applications are being filed and granted.

Abandonment of rail lines **should**, however, not be viewed as undesirable per se. Although many of Iowa's branch lines are essential to a viable transportation system in Iowa and should not be abandoned, there are many branch lines in Iowa which are no more than deadwood on Iowa's rail system and, accordingly, should be removed.

The map and table on the following page indicates those Iowa branch lines on which abandonment proceedings are currently pending before the I.C.C.



ABANDONMENTS OF LINES

	NAME OF LINE	FROM	TO	MILEAGE
1.	CHICAGO & NORTH WESTERN	IROQUOIS, SO.DAK.	WREN, IOWA	155.7 (31 IA)
2.	CHICAGO & NORTH WESTERN	ALBERT LEA, MINN.	LAKE MILLS, IA.	17.7 (5 IA)
3.	CHICAGO & NORTH WESTERN	STANWOOD	TIPTON	8.2
4.	CHICAGO & NORTH WESTERN	COUNCIL BLUFFS	MCCLELLAND	11.7
5.	CHICAGO, MILWAUKEE, ST. PAUL	JACKSON JUNCTION	HOPKINTON	79.07
6.	CHICAGO, MILWAUKEE, ST. PAUL	MILFORD	SPIRIT LAKE	7.43
7.	CHICAGO & NORTH WESTERN	CLUTIER	BUCKINGHAM	13.7
8.	CHICAGO & NORTH WESTERN	STEWARTVILLE, MINN.	MCINTIRE, IA.	33.7 (5 IA)
9.	CHICAGO & NORTH WESTERN	HARCOURT	GOWRIE	5.4
10.	BURLINGTON NORTHERN	LAMONI	MOUNT AYR	19.7
11.	CHICAGO & NORTH WESTERN	FT. DODGE	KALO	5.6
12.	CHICAGO & NORTH WESTERN	CONRAD	ELDORA	16.3
13.	CHICAGO, MILWAUKEE, ST. PAUL	STORM LAKE	REMBRANDT	13.2
14.	CHICAGO & NORTH WESTERN	SOMNERS	CARROLL	72.8
15.	CHICAGO & NORTH WESTERN	DIKE	KELSEY	20.8

In recognition of the economies available through rail transportation, the Iowa Legislature enacted the Iowa Railroad Assistance Plan through S.F. 1222 to aid those branch lines which, if improved, would increase railfreight service in Iowa. The Energy Policy Council's task of identifying those lines which meet this standard will be aided substantially by a consideration of the criteria used by the railroads in their abandonment applications before the I.C.C. The following is a brief review of those criteria as cited by railroads in the currently pending abandonment proceedings identified above:

1. Track Condition

- A. How is the track maintained and what are the annual maintenance costs?
- B. What are the conditions of bridges, culverts, ties, embankments, rails, and crossings?
- C. Is the present track condition capable of supporting the necessary car weights, and, if not, what is the amount of work and material necessary to put the line in such condition?
- D. What is the maximum allowable speed on the line?
- E. Would future operation and maintenance of the line constitute an undue burden on interstate commerce?

2. Alternative Modes of Freight Transportation

- A. Have country roads in the vicinity of the line been paved?
- B. Is there an easy access to nearby highways and do those highways serve the same general area?
- C. Are existing truck companies currently capable of serving the area?
- D. What other motor carrier service is available?

3. Present State of Freight Demand

- A. What is the amount of traffic, with regard to tonnage, and number of carloads per mile?
- B. What has been the trend in freight demands? -- Has there been an improvement?
- C. Will future operation force a loss to the railroad company?

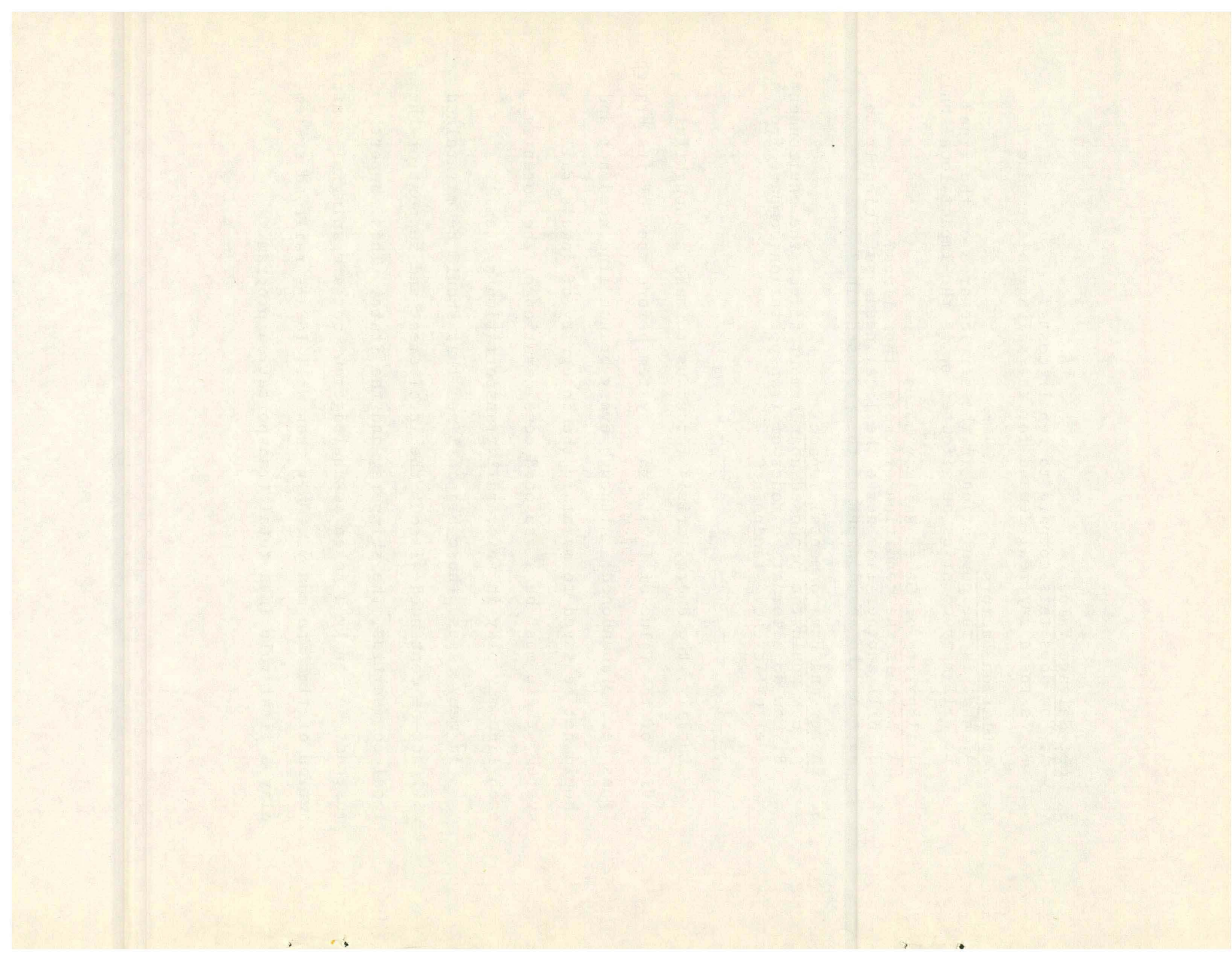
4. Present Financial Condition of Railroad

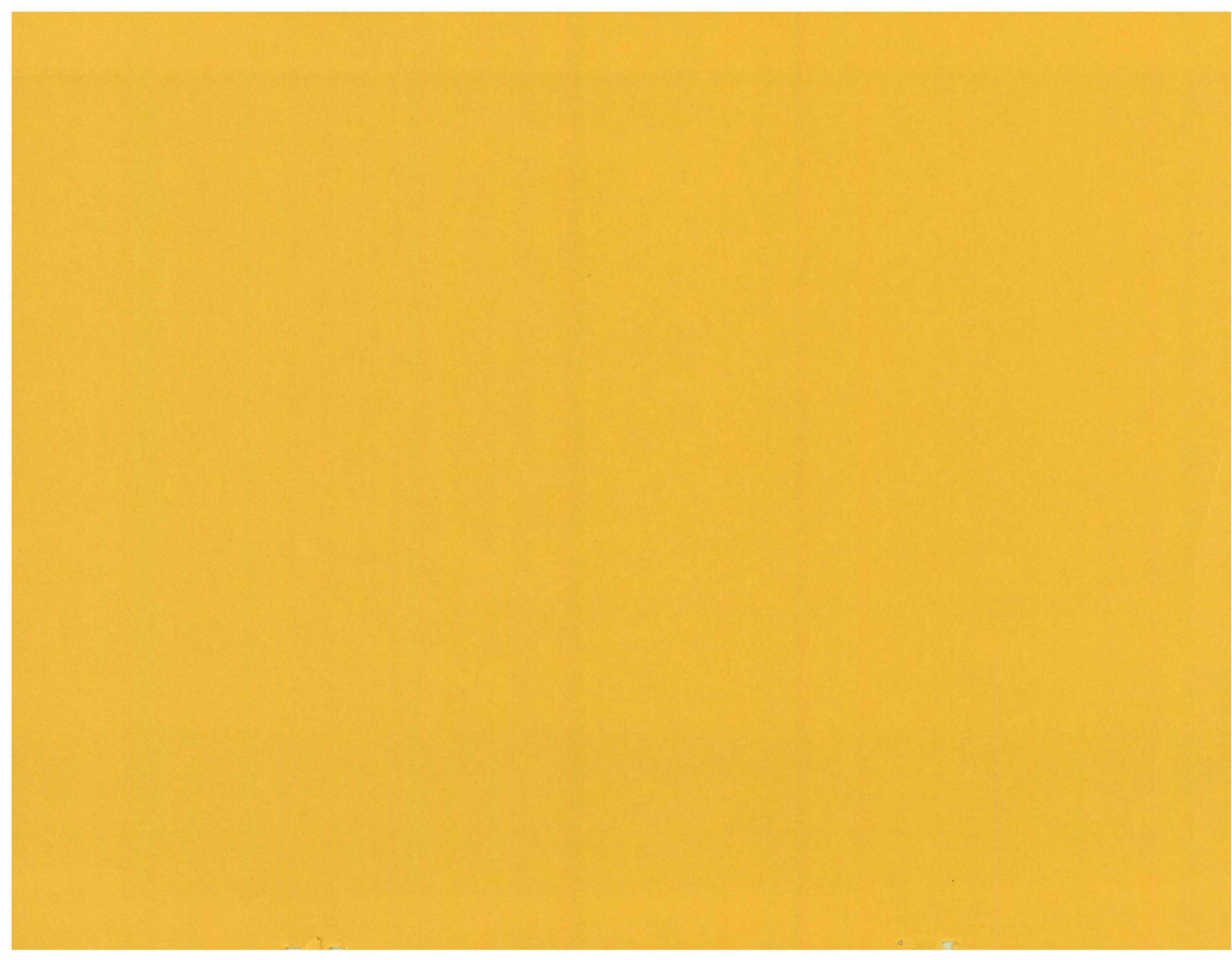
- A. Is it now in marginal financial condition?
- B. Does the company need outside assistance to maintain the line?

5. Net Salvage Value
 - A. How does this compare to repair costs?
 - B. Is there any real demand for the salvageable product?
6. Population Factors
 - A. What is the population in the service area of the line?
 - B. Will many counties be affected or is the impact local only?
7. Availability of Other Railway Lines
 - A. What is the condition of these other lines?
 - B. Will another line serve the local needs sufficiently to warrant the abandonment of the proposed line?
8. Energy and Environmental Impact
 - A. How would the proposed abandonment affect the environment?
 - B. How do alternative modes of transportation compare from a fuel efficiency standpoint?

Luckily, the energy crisis forced us to make a thoughtful review of the value of Iowa's rail system before many of its branch lines became abandoned. Although every branch line need not and should not be saved to maintain the integrity of Iowa's rail system, there must be a reasoned consideration of the potential each line may play in an overall transportation system.

In many cases, those branch lines that should be maintained will not be continued without the involvement and support of the local communities, the shippers, and the State. This support must not be merely a token acknowledgement but a meaningful contribution of time and money. Only then will Iowa's railroad system play a vital role in a total transportation program.





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