

Addendum 1: Preliminary Estimates of AIM Act Management Rule  
Compliance Costs



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## MEMORANDUM

**FROM** Charlie Gibbons

**SUBJECT** **Preliminary Estimates of AIM Act Management Rule Compliance Costs**

**DATE** May 12, 2025

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In this memo, we provide a preliminary, rough estimate of the economic costs of compliance with the Management Rule under the AIM Act. Where possible, we rely on public sources for inputs to our calculations; if we do not cite a public source for our assumptions, we are relying on input received from industry stakeholders that we have not independently verified at this time.

In summary, we estimate total costs of the Management Rule to be \$5 billion per year across the entire US grocery industry, reflecting a 22% reduction in industry profitability. This would have substantial implications for the financial viability of many grocery stores.

### 1. Example Store

As a benchmark example, we consider a typical 50,000 square foot store.<sup>1</sup> Based on discussions with stakeholders, we assume that this store has the following appliances that will newly require leak rate monitoring:

- 2 racks
- 4 condensing units
- 10 HVAC units

Hence, our store is assumed to have 16 newly covered appliances.

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<sup>1</sup> FMI, *The Food Retailing Industry Speaks*, 2024.

According to an annual industry report, grocery stores earn \$12 on average per square foot per year and 42% of sales are for items that require refrigeration.<sup>2</sup> Accordingly, our example store has \$32 million in annual sales, including \$13.5 million in refrigerated sales.

Compliance costs fall into five categories:

- Inspections
- Capital replacement
  - System replacement costs
  - Lost sales
- Repairs
- Project management
- Increased refrigerant costs

We estimate the costs in each category below.

## 2. Inspection Costs

The Management Rule requires quarterly inspections of the covered appliances, plus re-inspections of equipment that initially fails the inspection. Automatic leak detection systems are to be inspected annually. To calculate inspection costs, we assume that:

- Quarterly inspections by a qualified technician require 1.25 hours per appliance
- Technicians charge \$100 per hour
- 20% of appliances each quarter require re-inspections
- Annual inspections and maintenance of automatic leak detection systems take 2.5 hours

This yields an annual expenditure of about \$10,000 to technicians for inspections.

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<sup>2</sup> *Industry Speaks 2024*. These categories include: fresh prepared/food service, deli, meat, seafood, produce, dairy, and frozen.

TABLE 1: ANNUAL INSPECTION COSTS

Total Appliances	16
Inspection time per appliance	1.25
Inspection and maintenance time per automatic leak detectors	2.5
Hourly inspection rate	\$100
Share of appliances requiring follow up	20%
Cost per year	\$8,000
Annual cost of follow up inspections	\$1,600
Inspection and maintenance of automatic leak detectors	\$500
<b>Total inspection costs</b>	<b>\$10,100</b>

### 3. Capital Replacement

We assume that appliances will be replaced more frequently to comply with the Management Rule; put differently, we anticipate that the useful life of an appliance will be lower as a result of the Management Rule. Whereas, under the status quo, an appliance could receive maintenance to keep it reasonably functional with a leak rate in excess of 20%, we understand that the Management Rule would require the appliance to be replaced if it cannot attain a leak rate below 20%. Hence, to calculate the incremental costs associated with the Management Rule, we compare the cost of replacing equipment early relative to paying to maintain the equipment.

There is a benefit from delaying expenditures because financing those expenses can be pushed into the future. We assume that, if an appliance has to be replaced, its useful life is 10 years shorter than it otherwise would have been. To calculate the cost of early replacement, we compare the cost of replacement today to a “discounted” cost of replacement in the future.

The appropriate discount rate in this context is the real weighted average cost of capital (real “WACC”) for the grocery industry. The WACC for the retail grocery sector is 5.96%.<sup>3</sup> Assuming approximately 2.5% inflation going forward, this gives a real discount rate of approximately 3.5%. Further assuming that the useful life of an appliance is reduced by 10 years, the cost of early replacement equals 30% of its replacement cost.

In comparison, we assume that it would cost 10% of an appliance’s replacement value to maintain it for the additional 10 years (i.e., to its full status quo lifespan).

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<sup>3</sup> Aswath Damodaran, *Cost of Equity and Capital (US)*, January 2025, [https://pages.stern.nyu.edu/~adamodar/New\\_Home\\_Page/datafile/wacc.html](https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/wacc.html).

Hence, we assume that the net cost of early replacement equals 20% of the appliance's replacement cost.

In a given year, we assume that there is a 1-in-20 probability that a rack will require replacement; a 1-in-10 probability that a condensing unit would require replacement; and a 1-in-8 probability that an HVAC unit would require replacement. Replacement costs for these appliances are \$1.3 million; \$100,000; and \$50,000 respectively.

Taking these factors together, our example store is expected to experience an additional \$44,000 in economic costs associated with capital replacement.

**TABLE 2: NET COST OF EARLY REPLACEMENT OF APPLIANCES**

Appliance	Cost	Count	Failure Rate (%)	Replacement Cost	Early Replacement Cost	% of Alternative Maintenance	Net Cost of Early Replacement
	[1]	[2]	[3]	[4] = [1] x [2] x [3]	[5] = [4] x Penalty %	[6] = [4] x Alternative %	[7] = [6] - [5]
Rack	\$1,300,000	2	5%	\$130,000	\$36,726	\$13,000	\$23,726
Condensing units	\$100,000	4	10%	\$40,000	\$11,300	\$4,000	\$7,300
HVAC	\$50,000	10	13%	\$62,500	\$17,657	\$6,250	\$11,407
<b>Total</b>				<b>\$232,500</b>	<b>\$65,682</b>	<b>\$23,250</b>	<b>\$42,432</b>

Additionally, if emergency replacement is required, we assume that there will be lost sales. We for the appliances considered above, we assume that the downtime would be 14 days for racks, 2 days for condensing units, and 0 days for HVAC systems. We allocate refrigerated sales among racks and condensing units by assuming that one rack has 10 times the linear feet of a condensing unit. Using these assumptions and the replacement rates from above, we find that lost sales would be nearly \$23,000.

**TABLE 3: LOST SALES ASSOCIATED WITH EMERGENCY CAPITAL REPLACEMENT**

Appliance	Count	Failure Rate (%)	Downtime (days)	Retail Space Ratio	Share of Refrigeration Supported	Lost sales (\$)
	[1]	[2]	[3]	[4]	[5]	[6]
Rack	2	5%	14	10	83%	\$21,565
Condensing units	4	10%	2	1	17%	\$1,232
HVAC	10	13%	0	0	0%	\$0
<b>Total</b>						<b>\$22,797</b>

## 4. Repairs

As noted above, we assume that 20% of appliances require some maintenance to pass their inspections. Setting aside the expected number of appliances requiring replacement in a given

year (1.75; see Table 2), we expect about 8 appliances to require repairs at some point during the year to be in compliance. At a cost of \$1,000 per repair, this yields a cost \$7,700.

TABLE 4: LEAK REPAIR COSTS

Units requiring repairs	7.7
Average cost per repair	\$1,000
<b>Total cost of repairs</b>	<b>\$7,696</b>

## 5. In-house Management Costs

In-house staff will be required to schedule, monitor, and manage inspections, repairs, and replacements.

We assume that quarterly inspections, re-inspections, and basic maintenance would be scheduled and overseen by in-house staff, requiring 1 day per quarter or 4 days year.

We assume that in house staff would also be required to assist in designing, sourcing, scheduling, monitoring, and managing replacement projects. We assume that this would require 15 days for a rack replacement, 2 days for a condensing unit replacement, and 1 day for an HVAC unit replacement. This yields an expected 3.6 days of labor per year for replacements. Taken together, this is 7.6 additional days of work related to compliance.

The average salary for managers is approximately \$115,000 plus an additional 50% in fringe benefits, payroll taxes, and other expenses to the company.<sup>4</sup> Eight days at this salary rate is about \$5,200 per store per year.

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<sup>4</sup> US Department of Labor, Bureau of Labor Statistics, “Employer Costs for Employee Compensation – December 2024,” March, 14, 2025, <https://www.bls.gov/news.release/pdf/ecec.pdf>, Table 2: Management, business and financial.

**TABLE 5: IN-HOUSE MANAGEMENT COSTS**

Salary	\$116,280
Fringe	49%

Appliance	Count	Failure Rate (%)	Oversight Day	Annual Oversight Days
	[1]	[2]	[3]	[4] = [1] x [2] x [3]
Rack	2	5%	15	1.5
Condensing units	4	10%	2	0.8
HVAC	10	13%	1	1.3
Total Oversight Days of Capital				3.6
Total Oversight Days of Inspection				4
Total Oversight Days per Store				7.6
Total FTE equivalent				0.03
<b>Total Wage Costs</b>				<b>\$5,233</b>

## 6. Refurbished Gas Costs

In addition to the leak rate requirements, we understand that the Management Rule also requires the use of refurbished gas. We understand that the market for these refrigerants is currently limited, leading to high prices; in particular, we understand the refurbished gas premium to be about \$45 per pound. Based on the capacity of each appliance and an assumed 15% average leak rate, we estimate that this requirement would increase annual costs by \$22,000.

**TABLE 6: INCREASED COSTS FROM REFRUBISHED GAS REQUIREMENT**

Leak rate (%)	15%
Gas Premium (\$/lb)	\$45

Appliance	Count	Capacity (lb)	Refurbished Gas Premium (\$)
	[1]	[2]	[3]
Rack	2	1,000	\$13,500
Condensing units	4	125	\$3,375
HVAC	10	75	\$5,063
<b>Total</b>			<b>\$21,938</b>

## 7. Total Costs and the Impact on Profitability

In total, across all these categories, we find the economic cost of the Management Rule to be about \$110,000 for our example store.

**TABLE 7: SUMMARY OF ECONOMIC COSTS ASSOCIATED WITH THE MANAGEMENT RULE**

<b>Cost Category</b>	<b>Cost (\$)</b>
Inspection Cost	\$10,100
Capital Replacement Cost	\$42,432
Lost Sales	\$22,797
Refurbished Gas Premium	\$21,938
Leak Repair Cost	\$7,696
Management Labor Cost	\$5,233
<b>Total</b>	<b>\$110,197</b>

In 2023, net income for grocery stores was 1.6%.<sup>5</sup> For our typical store, this amounts to approximately \$500,000 per year. Hence, the additional economic costs imposed by the Management Rule would reduce net income by 22% annually.

Considering the entire industry, which includes approximately 45,000 stores,<sup>6</sup> the total economic impact of the Management Rule is estimated to be about \$5 billion per year.

**TABLE 8: ECONOMIC COSTS OF THE MANAGEMENT RULE AND THE IMPACT ON PROFITABILITY**

<b>Per Store</b>	
Status quo profits	\$509,184
Economic cost of Management Rule	\$110,197
Profits under the Management Rule	\$398,987
Change in profitability	-22%
<b>Industry-Wide</b>	
Stores nationwide	45,000
Total economic cost of Management Rule	\$4,958,851,494

Additionally, we understand that there would be a one-time payment of approximately \$10,000 per store to install automatic leak detection sensors. Across 45,000 stores, this would cost about \$450 million.

<sup>5</sup> FMI, *The Food Retailing Industry Speaks*, 2024.

<sup>6</sup> FMI, "Food Industry Facts," <https://www.fmi.org/our-research/food-industry-facts>.