VERISAE

CALIFORNIA'S CLIMATE CHANGE REGULATIONS:

WHAT YOU NEED TO KNOW ABOUT AB-32 AND THE REFRIGERANT MANAGEMENT PROGRAM

California's Global Warming Solutions Act, AB-32, was signed into law in September of 2006. The legislation promised a comprehensive program of regulatory and market mechanisms that would achieve significant reductions in the amount of greenhouse gas emitted within the state. This Regulatory Update provides the status of AB 32 and the requirements of one of its subcomponents – the Refrigerant Management Program which takes effect on January 1, 2011.

SUMMARY INTRODUCTION

Arnold Schwarzenegger chose the battle against global warming as a cornerstone of his fight for election as governor of California in 2003. Following his election, he campaigned relentlessly for the introduction of a far-reaching state-based legislation which would place California ahead of every other State as well as the federal government.

The result of this was The Global Warming Solutions Act, or AB-32. It was signed into law in September of 2006. The legislation promised a comprehensive program of regulatory and market mechanisms that would achieve significant reductions in the amount of greenhouse gas emitted within the state of California.

Supermarkets, convenience stores, food processors, hospitals, manufacturing operations, large office buildings, and universities were all affected by the introduction of the AB-32 law on January 1, 2010. In addition, US EPA restrictions through the Clean Air Act, Section 608 and the South Coast Air Quality Management District's Rule 1415 are also applicable.

Since that day, controversy has enshrouded the legislation and there have been numerous challenges against it. Many have said that AB-32 is bad for business and some of the greatest challenges have emanated from within the business world.

AB 32 IS FINALLY ON THE HORIZON

When the legislation was introduced, the political landscape was very different than it is today. These were pre-recession times and the environmental lobby had advanced its case considerably. It was expected that some kind of legislation would eventually be passed at the federal level. It was also expected that other States would view the progress made in California and take action independently.

The shift in the political climate over the past few years has indicated that federal level global warming legislation is unlikely in the near future. However, action at the state and region level continues with coalitions such as the Western Climate Initiative (WCI) and the Regional Greenhouse Gas Initiative (RGGI), as well as legislation requiring businesses to report greenhouse gas emissions in at least 26 states.

In California, numerous challenges to the Act have been dismissed recently, including the latest major challenge, Proposition 23, which failed at the polls in November 2010.

The failure of Proposition 23, which was funded largely by oil companies, showed that the majority of the California population still supports climate protection legislation. It's interesting to note that the midterm election also brought the election of Jerry Brown as the new governor of California. He was elected at a time when one of his

predecessor's most significant achievements was ratified.

The Proposition 23 battle was seen as a battle between entrenched business interests. A consortium of eminent investors battled hard to defeat prop 23, likely protecting their investments in a variety of green technologies, while "old" business suggested that AB-32 would herald a dangerous rise in energy costs at a time when the state was already reeling from recessionary side effects.

WHAT EXACTLY IS AB-32, THE GLOBAL WARMING SOLUTIONS ACT?

AB-32 mandates that the California Air Resources Board, also known as CARB, develop regulations and mechanisms that will cut the state's greenhouse gas emissions by 25% by the 2020. The legislation was created to work in parallel with emissions caps, which was expected from a federal level by 2012. The California Air Resources Board was charged with measuring greenhouse gas emissions amongst the industries affected to determine the "state of play" and the size of the problem. Notably, the bill did include a clause that gives the Governor the power to suspend the introduction of emissions caps, should circumstances dictate.

AB-32 mandates that the California Air Resources Board, also known as CARB, develop regulations and mechanisms that will cut the state's greenhouse gas emissions by 25% by the 2020.

Some of the other significant conditions imposed by the Act include:

- Mandatory reporting rules for significant sources of greenhouse gases by January 1, 2009
- Regulations by January 1, 2011 that will incorporate the maximum technologically feasible and cost effective mechanisms for achieving reductions in greenhouse gas emissions, including market and alternative compliance mechanisms
- CARB evaluations on all of the potential impacts on the state's economy, the environment, and public health to ensure equity between regulated entities, stability of the state's electricity supply, environmental law observation, and protection of lower income communities

The Climate Change Scoping Plan is an important component of AB-32 and it is a roadmap to help reach the ambitious plans embodies in the Act. To reduce greenhouse gas emissions to 1990 levels by 2020 required an approximately 30% reduction in emissions levels. This was the equivalent of reducing annual emissions by 14 tons of carbon dioxide for every resident of the state, down to only 10 tons per person by 2020.

The key strategies in the AB-32 scoping plan included:

- The introduction of a cap and trade program covering approximately 85% of the state's

emissions.

- A 30% reduction in vehicle greenhouse gas emissions by 2016 and introduction of a low carbon fuel standard. Other transportation measures restricted heavy-duty truck movement, promoted the use of efficient delivery trucks, and encouraged efficient city planning in the future.
- New regulations covering industrial emission sources, refinery flaring, fugitive emissions and other "leakage."
- Improved appliance efficiency standards.
- A huge push for the construction of "green buildings" with solar rooftops and solar water heating.
- Forestry sequestration projects.
- Introduction of more efficient agricultural equipment and better fuel and water use practices in the agricultural industry.
- Significant restriction of the use of gases with high global warming potential, notably refrigerants, and the introduction of leak resistant equipment and a fee-based deterrent system.

A number of "early action" measures were to be examined and adopted as part of AB-32. One of the principal measures adopted was a program to reduce greenhouse gas emissions from stationary sources through refrigerant leak monitoring, detection, enhanced reporting and system upgrades or replacement. This became known as the Stationary Equipment Refrigerant Management Program.

EARLY ACTION—THE STATIONARY EQUIPMENT REFRIGERANT MANAGEMENT PROGRAM

The Stationary Equipment Refrigerant Management Program covers stationary, non-residential refrigeration equipment and requires the reduction of refrigerant emissions with high global warming potential. That means it limits the use of chlorofluorocarbons, hydrochlorofluorocarbons, perfluorocarbons and hydrofluorocarbons. While these substances are already regulated by the EPA through the US Clean Air Act, the Refrigerant Management Program was designed to complement and expand control of refrigerant emissions.

On October 20, 2010, administrators approved the Refrigerant Management Program and implementation starts on January 1, 2011. On that date, all organizations that have refrigeration systems that use more than 50 pounds of high global warming potential refrigerant must be in compliance. Most likely, this won't affect most small business, but large entities like supermarkets, grocery stores, food processors, warehouses, and manufacturing locations that utilize industrial process cooling and institutions will be affected.

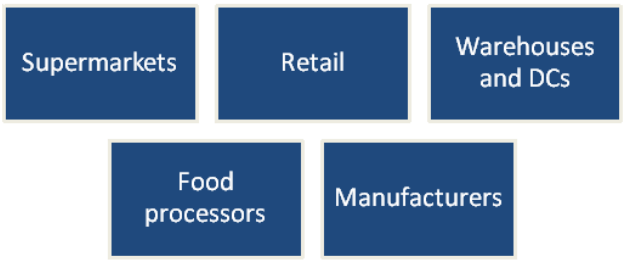
Technicians and installers, service personnel and those engaged in the disposal of refrigerant, the reclamation of refrigerant, or the disposal of appliances that use such a refrigerant, must also be in compliance.

- This program, as part of AB-32, is estimated to reduce such high GWP refrigerant emissions by

8 million metric tons of carbon dioxide equivalent over time.

- The program will be phased in over a few years and impacts will vary according to the size of the refrigeration system used at the facility.
- Facilities are further classified as small -- greater than 50 but less than 200 pounds of refrigerant under control, medium -- greater than 200 but less than 2000 pounds, large -- greater than 2000 pounds of refrigerant.

INDUSTRIES COVERED BY CALIFORNIA'S REFRIGERANT MANAGEMENT PROGRAM



WHAT ARE THE REQUIREMENTS TO BE AWARE OF FOR THE REFRIGERANT MANAGEMENT PROGRAM?

All facilities will be required, on January 1, 2011, to initiate leak detection, monitoring and recordkeeping and introduce "required service practices" for every appliance that features high GWP refrigerant. The requirement of automatic leak detection means a continuous monitoring system must be in place that alerts the operator of a leak. This requirement can be satisfied with one of two options:

1. Using a direct system that detects the presence of leaked refrigerant in the air around the system
2. Using an indirect system that interprets measurements such as temperature or pressure within the refrigerant system

Both options require that the system alert the operator that a leak has occurred such that they can send a certified technician to repair the leak.

Reporting requirements are also part of the Refrigerant Management program, but they will be phased in over the years 2012-2016. They include facility registration and implementation fees.
As of January 1, 2011, all technicians involved in servicing facility equipment must be US EPA certified and must follow specific "required service practices."

WHAT IS THE OPPORTUNITY?

Quite apart from the potential fines associated with noncompliance here, adoption can have significant benefits and cost savings. While there may always be some kind of resistance to any new regulation, it's clear that adoption of best management practices will result in a reduction in the use of refrigerant.

As refrigerant represents a significant operational cost, full regulatory compliance from day one cannot only save costs involved in the purchase of refrigerant, but can also save associated energy costs. Indeed, it has been estimated that facilities that are able to reduce their leakage rate from a nominal 30% a year down to a target 10%, could save approximately $2200 per 1000 pounds of refrigerant , per year.

On the understanding that compliance will be followed in subsequent years by reporting requirements, fees and fines for those who do not comply, it is best to consider the introduction of upgraded management practices immediately. Specifically, senior management should initiate a plan and designate specific personnel to oversee their compliance.

It has been estimated that facilities that are able to reduce their leakage rate from a nominal 30% a year down to a target 10%, could save approximately $2200 per 1000 pounds of refrigerant , per year.

As part of this plan, a comprehensive inventory of all systems should be engaged, to ensure that benchmark information is understood and in place. A process of inspection should also be engaged if not already part of this practice, to ensure that leaks are checked for on a regular basis and that automatic detection equipment is installed.

Whenever leaks are identified, they must be repaired promptly using only US EPA certified technicians. Records should be kept detailing all items of equipment, inspection processes, any leaks, subsequent repairs, refrigerant storage details and disposal events.

From a strategic perspective, refrigerant management should be part of a broader, overall management approach to greenhouse gases at the senior executive level of the organization. Any equipment that uses refrigerant gas also consumes energy, and as such, is also responsible for carbon emissions from energy use.

A well thought out and prompt execution of refrigerant management practices now should be just part of an overall commitment to the engagement of sustainable practices, companywide.

REFRIGERANT MANAGEMENT BEST PRACTICES

As an example of good practices, consider the Refrigerant Compliance Plan introduced by California-based supermarket chain Stater Bros. The company has a written refrigerant management plan and also employs EPA certified technicians. They have initiated automatic leak detection systems which can detect refrigerant at 200 ppm. They have regular refrigerant leak inspections and annual audits.

As a result of these initiatives, the company has reduced these specific refrigerants from a volume of 63,000 pounds in 2004 to 36,000 pounds in 2008. They have reported estimated annual savings of $270,000 and an associated greenhouse gas emission reduction of 18,000 metric tons of carbon dioxide equivalent.

As might be expected from a company that is willing to go the extra mile, this is only part of their commitment to helping the environment and reducing greenhouse gas emissions. They operate highly energy efficient facilities and have a significant "green waste" program alongside their leading refrigerant management practices. Collectively, their approach represents best practices in their industry and beyond.

AB-32 and its Refrigerant Management Program represent significant milestones in what is sure to be part of our overall gradual transition to a low carbon economy. Forward thinking organizations never underestimate the impact that they can make by taking action over and above what is required by legislation or in comparison to average uptake among their peers.

It goes without saying that while any negative impacts associated with noncompliance should be avoided at all costs, legislation should always be analyzed to reveal the true potential cost savings and even reveal those reputational benefits associated with such a significant course of action.

FREQUENTLY ASKED QUESTIONS

Refrigerant Management Program

What is the Refrigerant Management Program?

The Refrigerant Management Program requires specific best management practices to reduce emissions of refrigerant from non-residential refrigeration systems. The regulation includes provisions similar to current federal and local regulations for ozone-depleting substances (ODS) and extends requirements to ODS refrigerants substitutes.

Why was the Refrigerant Management Program created?

- Addresses the problem of high leak rates from stationary, non-residential refrigeration.
- By using the program's best management practices, businesses can reduce their emissions of Chlorofluorocarbon (CFC), Hydrochlorofluorocarbon (HCFC), and Hydrofluorocarbon (HFC) refrigerants, which are highly potent greenhouse gases (typically thousands of times more potent than carbon dioxide (CO_2).)
- It is a board approved AB 32 Early Action Measure developed to help meet the goals of reducing CA greenhouse gas emissions to 1990 levels by 2020.

Who must comply with the regulation?

The regulation affects any owner or operator of a facility with a stationary, non-residential refrigeration system using more than 50 pounds of a high-global warming potential (GWP) refrigerant. The threshold of more than 50 pounds of high-GWP refrigerant is based on the single refrigeration system with the largest refrigerant charge. It is not the cumulative refrigerant charge from all refrigeration systems, at a facility.

The regulation also affects any person who services any appliance using a high-GWP refrigerant or distributes or reclaims a high-GWP refrigerant.

What types of businesses have refrigeration systems with more than 50 pounds of high-GWP refrigerant?

Businesses that generally have refrigeration systems with more than 50 pounds of high-GWP refrigerant include: supermarkets and grocery stores, food and beverage processors, cold storage warehouses, and industrial process cooling. Businesses that generally do not have these types of refrigeration systems include: bars and restaurants, gas stations, liquor stores, bakeries, and office buildings.

How can a business determine the refrigerant charge of their refrigeration system?

A business can determine the refrigerant charge of their refrigeration system(s) by contacting the manufacturer or their refrigeration system service provider.

What is a high-global warming potential refrigerant?

High-global warming potential, or high-GWP, refrigerants include CFC, HCFC, and HFC refrigerants. Refrigerants that are not high-GWP include ammonia and carbon dioxide (CO_2).

What are the estimated emission reductions of the regulation?

The regulation is estimated to reduce high-GWP refrigerant emissions by 8 million metric tonnes of carbon dioxide equivalent ($MMTCO_2E$). This reduction has an equivalent climate impact of removing 1.4 million cars and light trucks from the road each year.

What are the estimated costs?

On average, the regulation results in a cost savings of $2 per metric tonne of carbon dioxide equivalent ($MTCO_2E$) in emissions reduced. The cost savings are a direct result of reduced consumption of refrigerant through the use of best management practices.

What does the proposed regulation require?

The regulation requires facility registration, leak detection and monitoring, leak repair, retrofit or retirement, and recordkeeping for any person who owns or operates a facility with a stationary, non¬residential refrigeration system using more than 50 pounds of a high-GWP refrigerant. Reporting and payment of an implementation fee is required for any person who owns or operates a facility with a stationary system using 200 pounds or more of a high-GWP refrigerant. Required service practices apply to any person who services an appliance using a high-GWP refrigerant. Reporting and recordkeeping requirements also apply to distributors, wholesalers, and reclaimers of high-GWP refrigerants.

When does the regulation take effect?

The regulation has requirements that are phased in over time depending on the largest refrigeration system used at a facility.

Refrigeration systems are categorized as:

- **Large**: refrigeration systems using 2,000 pounds or more of a high-GWP refrigerant
  - Systems typically used in cold storage warehouses, manufacturing, and some supermarkets
- **Medium**: refrigeration systems using 200 pounds or more, but less than 2,000 pounds, of a high-GWP refrigerant
  - Systems typically used in smaller warehouses and many supermarkets
- **Small**: refrigeration systems using more than 50 pounds, but less than 200 pounds, of a high-GWP refrigerant
  - Systems typically used in some pharmacies and grocery stores

The following requirements for facilities using applicable refrigeration systems, refrigerant distributors and refrigerant reclaimers will apply on the effective date of the regulation (January 1, 2011):

- Required Service Practices applicable to the service of any high-GWP appliance
- Leak detection, monitoring, and recordkeeping
- Retrofit or retirement plans
- Refrigerant distributor, wholesaler, and reclaimer prohibitions

Refrigerant distributor, wholesaler, and reclaimer annual reporting requirements will become effective in 2012. Requirements for facilities using applicable refrigeration systems that are phased in include:

- Facility registration: Large in 2012, Medium in 2014, Small in 2016.
- Annual implementation Fee: Paid upon initial registration for operation and annual renewals - Large ($370) and Medium ($170). There is no fee for small.
- Annual Facility reporting: Large beginning in 2012 and Medium beginning in 2014. No reporting is required for Small.

How will the Refrigerant Management Program be enforced?

- Air districts may adopt a rule of equivalent emission reduction benefit under local authority.
- Air districts may enforce statewide regulation under agreements with the ARB with funding provided through fees paid by facilities subject to the regulation.

Where can I find more information about the regulation?

For further information, please visit *www.arb.ca.gov/cc/reftrack/reftrack.htm*, email *reftrackinfo@arb.ca.gov* or call (916) 327-8532. You can also sign up for the program's listserve at *www.arb.ca.gov/listserv/listserv_ind.php?listname=reftrack*.

To obtain this document in an alternative format or language please contact the ARB's Helpline at (800) 242-4450 or at *helpline@arb.ca.gov*. TTY/TDD/ Speech to Speech users may dial 711 for the California Relay Service.

OVERVIEW OF

Stopping Refrigerant Leaks

California requirements for refrigerant management

Beginning January 1, 2011, owners and operators of refrigeration systems that use more than 50 pounds of high global warming potential (GWP) refrigerants must comply with new Air Resources Board regulations designed to reduce California's greenhouse gas emissions. The new rules build on existing local and federal regulations and are expected to benefit businesses through cost savings due to reduced refrigerant consumption.

High-GWP refrigerants include chlorofluorocarbons, hydrochlorofluorocarbons, and hydrofluorocarbons. These compounds can be thousands of times more capable than carbon dioxide at trapping heat from the sun. Refrigeration systems that use ammonia, carbon dioxide or other non-high GWP refrigerants are not subject to the rule.

Who must comply?

Any business with a stationary, non-residential refrigeration system using more than 50 pounds of high-GWP refrigerants must comply. Please check with your service technician first to determine the amount of refrigerant your system uses. Most small businesses, such as bars, restaurants, liquor stores, and gas stations do not have these size refrigeration systems. Facilities that typically have these size systems that would be subject to the rule include:

- Supermarkets and large grocery stores;
- Food and beverage processors;
- Cold-storage warehouses; and,
- Those using industrial-process cooling.

The regulation also affects any person who installs, services, or disposes any appliance using a high-GWP refrigerant or sells, distributes and/or reclaims high-GWP refrigerants.

Implementation timeframes

Beginning January 1, 2011, the following are required (visit the website below for detailed rule requirements):

- Facility owners and operators requirements such as:
  - Conduct leak detection and monitoring and recordkeeping;
- Servicing - Follow Required Service Practices such as:
  - Technicians must be U.S. EPA certified;
  - Leaks must be repaired prior to recharging; and,
  - Cylinders must be properly evacuated before disposal.
- Distributors, wholesalers, and re-claimers – Follow prohibitions such as:
  - Must sell high-GWP refrigerants only to certified technicians or their employers.

Beginning January 1, 2012:

- Facilities with systems with greater than or equal to 2,000 lbs. of high-GWP refrigerant must register with the ARB, submit an annual report, and pay annual fees;
- Distributors, wholesalers, and re-claimers must report annually.

Beginning January 1, 2014

- Facilities with systems with greater than or equal to 200 lbs. but less than 2,000 lbs. of high-GWP refrigerant must register, submit an annual report, and pay annual fees.

Beginning January 1, 2016

- Facilities with systems with greater than 50 lbs. but less than 200 lbs. of high-GWP refrigerant must register.

For More Information

Visit our website at *www.arb.ca.gov/cc/reftrack/reftrack.htm*, email *reftrackinfo@arb.ca.gov*; or call (916) 327-8532 and sign up for the listserve *www.arb.ca.gov/listserv/listserv_ind.php?listname=reftrack*

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ABOUT VERISAE

Verisae (www.Verisae.com) develops, markets, and licenses **Sustainability Resource Planning (SRP)™,** an enterprise solution that empowers organizations to make "sustainability actionable". Verisae helps measure, manage and monetize energy costs and carbon emissions. SRP covers the core functions of sustainability needs by combining multiple business processes and systems into one database to use across the enterprise. Our platform improve operational efficiency, make sustainability initiatives actionable, and reduce energy costs carbon emissions for distributed enterprises and energy companies.

ENVIRONMENTAL MANAGEMENT

Carbon Emissions Manager
- Scope 1 & 2 Emissions
- Scope 3 Emissions

Sustainability Project Manager

Water Manager

Waste Manager

ENERGY MANAGEMENT

Energy Supply Manager
- Utility Bill Processing
- Active Energy Response
- Utility Contracts Management
- Energy Spend Manager

Energy Demand Manager
- Real-Time Energy Management
- Active EE Dispatch
- Energy Efficiency Projects

ASSET MANAGEMENT

Service Manager
- Service Provider Management
- Financial Management

Asset Manager
- Facilities Management
- Equipment Management
- Asset Monitoring & Alarming
- Parts & Inventory Management

Procurement Manager
- Rebates & Incentives Management
- Total Capital Planning
- Equipment Procurement

Given the heightened priority of corporate sustainability, Verisae is positioned right now to enable organizations to establish a carbon footprint baseline, outline energy management options, and provide a comprehensive corporate sustainability action plans in a manner of months. All of which can be implemented with metrics in place to highlight bottom-line cost savings and return on investment timelines.

Today, Verisae delivers a broad range of sustainability solutions to over **40 global clients** with a service network of **7,500 third party service providers** consisting of **60,000 application users.** Our integrated sustainability platform actively tracks over **2,100,000 million assets** across **20,000 sites.** We help measure, manage and monetize energy costs and carbon emissions. We are uniquely position to help organizations prove return on investment (ROI) for sustainability initiatives.

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