

White Paper



## Peak Oil & Sustainability: CRM's Potential Impact

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The CRM industry can help companies to fend off the worst effects of increasing energy costs.

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## About Beagle Research

Since 2004 Beagle Research has been providing focused market research to our clients, helping numerous emerging companies to gain traction in the market. Whether the client is an emerging company or an established company with an emerging idea, our insights and hands on approach give them the knowledge they need to make informed decisions about their strategies and directions.

On a daily basis a growing group of senior level analysts and consultants helps clients to make informed decisions to effectively compete and succeed in the market. Our clients depend on us to help them sort through issues, develop strategies and lower the risks associated with bringing products to market.

# Peak Oil & Sustainability: CRM's Potential Impact

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## Overview

This paper takes as its premise that energy costs are now rising and are expected to do so for the foreseeable future. The cause of the rise is a phenomenon called Peak Oil. Analysts and scientists in the energy and petroleum sector have performed significant studies of the situation to make the point that petroleum resources are not infinite and are reaching a maximum in our ability to extract greater quantities. This paper does not try to replicate their work. For a full discussion of Peak Oil and its mirror opposite, Global Warming, we recommend searching the Internet using keywords like "Peak Oil" or going to one of the on-line bookstore sites and searching on the same keywords.

Additional resources can be found at The Association for the Study of Peak Oil ([www.peakoil.net](http://www.peakoil.net)), International Energy Agency ([www.IEA.com](http://www.IEA.com)), The U.S. Department of Energy and its Energy Information Administration (EIA) ([www.eia.doe.gov](http://www.eia.doe.gov)), The Oil Drum ([www.theoil Drum.com](http://www.theoil Drum.com)) and other similar sites.

This paper is focused on examining the potential impacts of Peak Oil on the business world and specifically asking what solutions the CRM industry can implement to help companies to fend off the worst effects of increasing energy costs. Obviously, energy consumption — in research and development, production and some forms of transportation — is beyond the scope of this paper. However, transportation issues affecting front office personnel in the performance of their duties in sales, marketing and customer service and support are the prime targets of this analysis. Solutions in these areas will come in large measure from improvements in front office business processes driven by CRM applications.

## The Escalating Challenge

While this paper is not detailed enough to serve as a reference for all aspects of the Peak Oil situation we will recap the major points as they relate to CRM

## Peak Oil Defined

Peak Oil's fully articulated description is peak oil production, which simply means that our ability to pump petroleum out of the ground is reaching its maximum rate. Increases in demand beyond this rate will be met by classic supply and demand responses, which are already making energy more expensive. The same experts are also making the point that once production peaks, a decline in production is inevitable and the seminal question is how fast the rate of production will decrease. Thus the issue of Peak Oil is of considerable importance to the future of advanced societies and businesses.

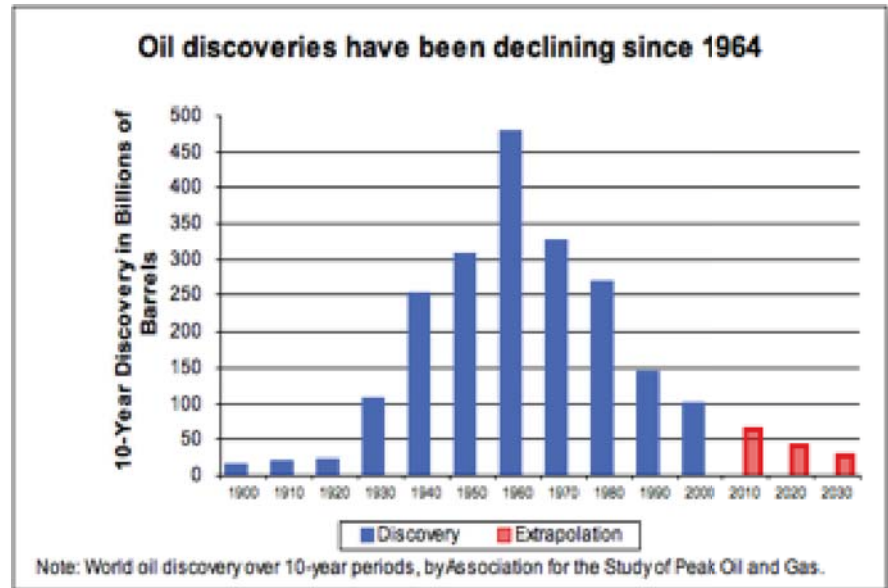
Globally the petroleum industry extracts and we all use between 86 and 87 million barrels (bbl) of oil each day. While the Middle East is a primary source of petroleum and some of its fields are the largest ever discovered, crude oil

*Exploration for new oil is ongoing and small deposits are being discovered but in the last thirty years no large fields have been discovered and large fields discovered in the early decades of the 20th Century have continued to age. Oil discovery peaked in the 1960s.*

**Figure 1:** Global oil discoveries in the 20th Century and beyond

Source: The Oil Drum, August 31, 2008

<http://www.theoil drum.com/tag/overview>



comes from sources around the world. Each producing region has a fixed amount of oil in the ground (Original Oil in Place or OOIP) and only a portion of that oil is ever produced due to geological, technical, economic and other factors.

Exploration for new oil is ongoing and small deposits are being discovered but discovery peaked in 1964 (Figure 1) in the last forty years the large fields discovered in the early decades of the 20th Century have continued to age. The geologist M. King Hubbert first produced a bell shaped curve that describes the life of a resource such as an oil field and the curve retains his name today. Although Hubbert was regarded as a quack when he first proposed his peak theory events proved him right. Hubbert's work forecasted with uncanny accuracy the peaking (and continuing decline) of U.S. oil production in 1970.

Meanwhile, global demand continues to rise. For example, the United States currently consumes about 24 million barrels of oil daily while producing about seven million barrels. Furthermore, emerging economies in China and India, striving for first world lifestyles and the energy consumption that implies, continue to put increased demand on a limited supply. Classical economics tells us that increasing demand in the face of limited or decreasing supply leads to price escalation. We see this happening now.

**Figure 2** shows world oil production flattening out over the last several years. With the increasing demand from the developing world, the price spikes of the last few years come into perspective.

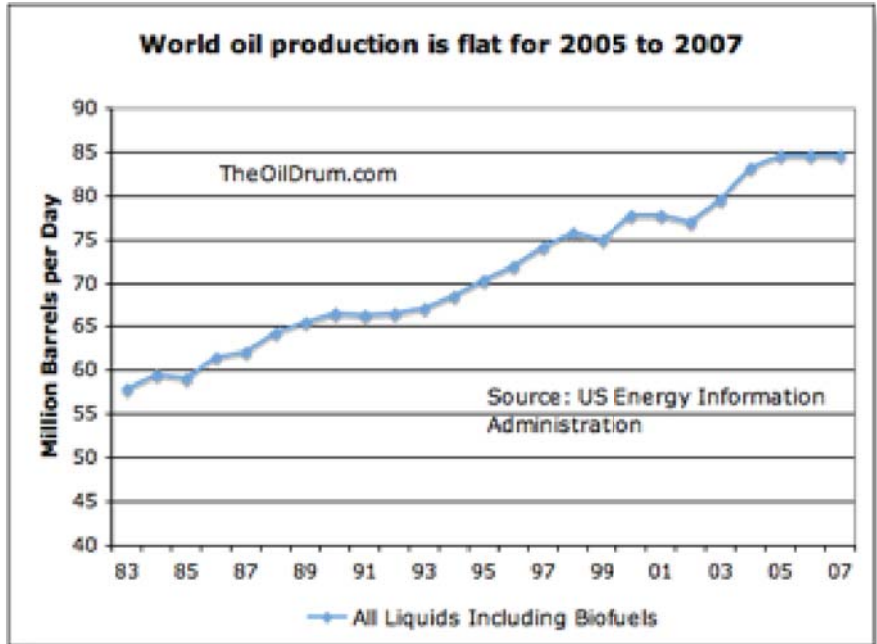
**Figure 3** provides revised estimates of future production from 14 different models collated by the U.S. Department of Energy's Energy Information Administration. As you can see, the forecast is for a peak sometime in the very near future. Meanwhile, EIA also continues to forecast demand in excess of 100 million barrels per day in the decades ahead. Clearly, this is unsustainable and prudent policy dictates that we identify strategies and solutions for averting a crisis.

*"Peaking [oil production] will result in dramatically higher oil prices, which will cause protracted economic hardship in the United States and the world."*

– The Hirsch Report

**Figure 2:** World oil production since 1983

Source: The Oil Drum, August 31, 2008  
<http://www.theoil Drum.com/tag/overview>



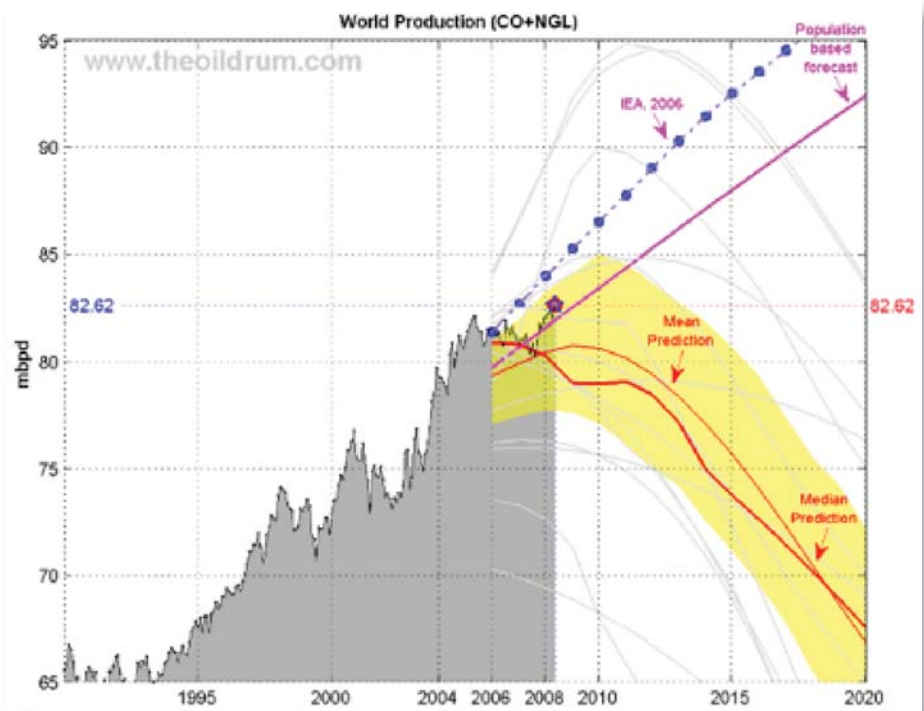
The peaking pattern seen in oil is mirrored in other energy sources including natural gas and coal. No energy source is infinite and while fossil fuel availability is about to peak, other energy forms such as nuclear and hydro electric have their own peak profiles. The amount of uranium is finite and

**Figure 3:** Peak Oil Update - August 2008: Production Forecasts and EIA Oil Production Numbers

World oil production (EIA Monthly) for crude oil + NGL. The median forecast is calculated from 14 models that are predicting a peak before 2020 (Bakhtiari, Smith, Staniford, Loglets, Shock model, GBM, ASPO-[70,58,45], Robelius Low/High, HSM). 95% of the predictions sees a production peak between 2008 and 2010 at 77.5 - 85.0 mbpd (The 95% forecast variability area in yellow is computed using a bootstrap technique).

Source, TheOilDrum.com  
[http://www.theoil Drum.com/files/PU200808\\_Fig3b\\_0.png](http://www.theoil Drum.com/files/PU200808_Fig3b_0.png)

Source: The Oil Drum, August 31, 2008  
<http://www.theoil Drum.com/tag/overview>



without a massive reprocessing program, nuclear energy will not be able to make up the shortfall. Neither will hydroelectric power as many of the available rivers are already dammed and environmental concerns make it hard to increase damming.

A new energy paradigm is being born, reliant on renewable resources such as wind, solar and geothermal. Over time the new paradigm will replace the existing reliance on fossil fuels but this paradigm will also have limits and energy consumers will be forced to live within them.

### **Peak Oil's Impact on the Front Office**

The combination of declining supply and increasing demand for oil is producing instability in the energy markets leading to higher prices and greater expenses for companies. Groups that depend on travel for some or all of their work — such as sales — are particularly hard hit as are companies that have supply chains that stretch across continents or oceans and those that have large pools of moderately paid workers such as customer service representatives.

Supply chain partners can only absorb increased shipping and other energy related costs for so long before the need arises to pass on those increases in the form of higher unit prices. More tellingly, moderately paid individuals may not have many options for reducing their commuting costs and for some, the cost of commuting may make a job unprofitable leading to churn and labor shortages in call centers, for example.

This Beagle Research Group executive white paper focuses on the challenges we see looming for companies that consume CRM applications and services and offers concrete suggestions about what CRM vendors can do to develop and deliver business solutions that their customers can use to alleviate some of the worst effects of Peak Oil which we can expect to see in the years ahead.

### **The Business Situation**

In many organizations, the front office employs a large number of people, many of whom are in one way or another dependent on transportation to perform part or all of their jobs. Enterprise class companies have direct and indirect sales staffs numbering in the thousands and the nature of face-to-face selling — educating customers about new or emerging products — makes these people a vital part of company operations. Whether an enterprise employs a direct sales force or a partner channel, the rising cost of energy, and transportation, will build additional cost into most products.

The added cost of energy can be contained to a degree through wise moves aimed at reducing their impacts. Since each phase of business has a potentially different exposure to energy price risk, the solutions to each risk must be tailored.

For example, if a company's transportation lines are long, an obvious solution might be to reduce distances traveled but there are many ways to accomplish this. Depending on the business process involved a reduction could mean locating production closer to the customer, reducing the number of calls that sales people make by replacing them with video presence, off-loading more responsibilities to the partner channel (which presumably locates itself closer to the customer), or enabling workers to conduct business from home offices. In all of these cases there are potential technology solutions and front office vendors can improve their revenues and profits by considering how they can help remove transportation costs from the customer facing business processes they support.

## Ten Innovations that CRM Vendors Should Consider

Our list of ten CRM innovations that vendors can make to help their customers to reduce the total travel needed in the sales process while still enabling a high degree of customer contact is far from complete. We are certain that additional good ideas will emerge and we will update this paper as they become available.

### Customer Module

Although no CRM vendor has yet built and delivered a customer module to market, the idea is in line with other CRM 2.0 concepts involving customer knowledge that can lead to better focused encounters with customers. The customer module can help vendors in several ways by collecting all known customer information in a central database, supporting community outreach, providing targeted analytics and providing positive feedback loops to both customers and prospects.

Some observers will say that the purpose of CRM is to provide such services but we disagree that CRM currently embodies the prerequisites. The best CRM systems provide for an integrated view of the customer entity but too often that view is of direct users and accounting personnel who pay the bills. What is often missing from current CRM systems is data about the people who have business pain and budgets to solve them. Even if this data is available, current CRM has no built-in functionality to continually update information. The customer module should contain these elements:

1. **A customer database.** The customer data would be securely exposed to a social networking interface that enables relevant customer personnel to enter and update their demographic information. This interface would be a vital access point for new customer personnel to update vendors about job and responsibility changes. By maintaining a database of known customers in a social networking environment an organization can gather customer data through multiple activities and tabulate responses based on a variety of demographics.
2. **A community interface.** The community interface should be a bi-directional communication medium, not simply a survey apparatus. A keystone of CRM 2.0 is the idea of community. One of the problems with simple survey based community sites is that they ask a lot from customers without giving much in return. A better solution would be to vary the content branching out from simple surveys to include community building activities that foster dialog among users rather than simply back and forth between the vendor and a customer. The community interface would support these needs.
3. **A loyalty mechanism.** Using the customer database, the loyalty mechanism would be used as part of the outreach to customers. Currently, some large companies such as airlines maintain separate loyalty programs managed by software that is largely dedicated to managing frequent flyer miles or other points systems. The loyalty mechanism can easily be expanded to provide rewards to such things as participation in the community or for generating input that triggers a valuable line of discussion.

*“Anyone who believes exponential growth can go on forever in a finite world is either a madman or an economist.”*

*– Kenneth Boulding*

4. **Analytics.** Using analytics to sort through the increased amount of information that will come from all aspects of the customer module will deliver significant benefits. There is still a good deal of confusion about the difference between satisfaction and loyalty and some of it can be attributed to the fact that loyalty is harder to measure than satisfaction. Loyalty focused on a longer time horizon than satisfaction. Prior to the implementation of a customer database and community interface, ephemeral satisfaction surveys were the best many organizations could hope for. But with the introduction of the customer module it will be possible to go beyond satisfaction to study loyalty if organizations invest in new analytics.

### Embedded Telecommunications

The telephone is widely regarded as a necessary component of modern business but it is still a separate service. Tighter integration of telecommunication services with front office applications will provide numerous benefits such as enabling better communications between vendor and customer employees, especially in the sales and support processes. Ironically, telecommunications functions are already tightly integrated in hand held wireless devices which mobile sales people take good advantage of. However, in a world where travel will be curtailed to one degree or another, sales people may spend more time in the office where the two devices are separate. Adding voice as a distinct data type (see below) will be key to improving efficiencies of sales people. In addition, service and support personnel already have tight integration of phone and CRM services but we envision more service people working from home as transportation costs continue to eat away at take home pay for moderately paid individuals. The ability to project combined CRM and phone applications across the Internet to workers who stay at home some of the time will become an important requirement for CRM. This need will be partially addressed by the introduction of voice as a data type.

### Voice as a Data Type

Emerging companies are beginning to offer ways to embed telecommunications capabilities in CRM applications and the next logical step is to enable capture, storage and manipulation of natural voice data. For example, rather than taking notes and reconstructing a long narrative at some later date, a sales person could call an SFA system and dictate notes, thus enabling information capture closer in time to the event when memories are fresh. If voice can be used as another data type it can also be used to kick off workflows. Accomplishing this would give remote or mobile sales people the ability to get more done while on the road and reduce the number of times they might need to travel to a headquarters location (often out of territory).

### Embedded Video

A logical next step from embedded telecommunications and voice as a data type is embedded video. Enterprises now have the ability to convene audio conference calls with or without additional slideware. Embedded video would provide users with the ability to see their counterparts to discuss ideas and generally to meet without the inconveniences and expense of traveling. The

*Some experts have estimated that converting the current energy infrastructure to accommodate new energy paradigms could cost in excess of \$20 trillion in today's dollars. This immense task will be the work of a generation.*

evolving acceptance of computers with embedded cameras and microphones suggests that corporate users will be able to take advantage of these tools when they come onto the market. The caveat to this proposal is that it will require a more robust Internet platform — at least in the U.S. — to carry the additional data.

### Video/Documentary Content Development

This suggestion must be carefully explored because development of high production value video is — and may always be — too expensive for CRM users regardless of how inexpensive the hardware becomes. Nevertheless, video is a powerful way to tell a story and having some way to combine images and sound as part of an enterprise content library is a good idea. It can provide another way to maintain customer relationships without the need for expensive travel and done right, video can be a powerful training and support tool that can be used between vendors and customers as well as within the enterprise to train and manage remote workers. In the hands of an internal marketing department, video production will enable vendors to better control messaging by creating content libraries with capabilities that go well beyond today's content libraries.

### Improved and More Extensive Analytics

Analytics have been extremely valuable in sales and marketing but the use of analytics must expand well beyond their use in pipeline analysis and sales forecasting. While the market is becoming crowded with analytics vendors offering products for sales, opportunities abound for analytic applications for channel management, territory planning and business operations forecasting (distinct from sales and marketing). Analytics have always offered the capability for organizations to develop metrics to help them assess progress — especially in sales and marketing. We expect analytics and metrics development will be an important tool for managers with remote workers and sales processes they cannot become involved in directly.

### More Robust PRM

Relocalization is, in some ways, the opposite of globalization and we expect this term to gain in popularity as individuals and organizations gravitate towards less transportation intensive business processes. The movement by some individuals to eat locally produced foods is one example of the relocalization trend that we see as inevitable. In business another trend in the same vein will be the greater reliance producers place on the indirect sales channel. Rather than fielding large national sales forces, we expect large enterprises will rely more on channels as a means of eliminating costs and therefore protecting margins. With the loss of control that is inevitable with channel delegation we expect vendors will seek analytics based ways to track activities. Improved PRM (partner relationship management) systems will have to capture data produced by partner activity rather than formal data entry or risk creating overhead that no one wants. Analytics will be a key to turning casual data collection into useful information.

*“The World has never faced a problem like this. Without massive mitigation more than a decade before the fact, the problem will be pervasive and will not be temporary. Previous energy transitions (wood to coal and coal to oil) were gradual and evolutionary: peak oil will be abrupt and revolutionary. ”*

– The Hirsch Report

## Management Tools to Support Remote Workers and Their Managers

The vendor-customer relationship is not the only one that will be transformed by new energy realities. The relationship between a company and its employees will also have to evolve. To the degree that the transformations described here place workers in new locations where they may not be in direct contact with their managers, organizations will need to rely on sophisticated software tools that participate in business processes which have traditionally been manual or mostly so. Hiring, training, educating, managing and motivating remote workers will become processes that must be intermediated by software.

In some ways, innovations already discussed will have an impact on management too. For example, the voice and video technologies developed for customer facing applications will also become important parts of management tools. New project management tools will be doubly important because the workforce is also continuing its trend toward free agency. Since the 1980s corporations have shed significant numbers of jobs only to replace them with temporary or contract workers and many of these workers function as independent consultants who may or may not report to a company office. These realities suggest that management systems for remote workers will be a growth area.

Moreover, with these tools will come different management styles that are more project focused. Compensation systems triggered by project milestone attainment will be needed to objectively manage consultants and systems that provide views for both the consultant and the customer will be valuable communications devices for project related matters. We expect that analytics will have an important role to play here as well.

## Configuration, Pricing and Quotation (CPQ) and Deal Management

The continued emphasis on managing transportation costs will cause many enterprises to find better ways to ensure the accuracy of their orders if it can be shown that such efficiencies can reduce returns and the overhead associated with them. CPQ systems have been employed to improve order accuracy and provide audit trails for sales negotiations and it is reasonable to anticipate that these systems will be in demand as we seek ways to better manage front office operations in the face of transportation challenges.

## Territory Planning

Once thought to be a tool for the pharmaceuticals industry only, territory planning is beginning to be adopted in other sales markets. These solutions provide benefits to companies, managers and sales people in several ways. First, a territory planning application can help ensure that all territories have the critical mass of opportunities needed for an average sales person to make quota. Second, good planning can help design the territories with the most compact areas, best access and use of highways and more — all helping to reduce travel time and costs while optimizing coverage. We believe territory planning systems will become greater parts of enterprise sales organizations' arsenals as the costs of travel continue to increase.

## Analysis

This is a very interesting time for front office software as well as the economy at large. The emergence of Peak Oil and Global Warming make it imperative that the human race transitions from fossil fuels or risk economic collapse.

Admittedly, Peak Oil is not as widely accepted an idea as Global Warming and no doubt there will be skeptics who disagree with the idea that oil production could decline or even peak. However, the earth is a finite thing and logically, petroleum or any other resource is similarly limited. Furthermore, other fuels including natural gas and coal all face the same peaking phenomenon so switching from one form of fossil fuel to another will not solve the problem.

Petroleum geologists and other experts estimate that the total available petroleum contained in the earth when oil extraction began in 1859 in Titusvill, PA, was some 2.5 trillion barrels. Today these experts estimate that there are roughly one trillion barrels left. Moreover, the rate of use now reaches 85 million barrels per day.

Many observers unfamiliar with the peaking phenomenon automatically assume that biofuels or nuclear fission technology will take up the slack in energy production, but there is insufficient uranium to make nuclear a serious possibility and there is not enough arable land to grow both fuel crops and food. Furthermore, hazards and disposal complexities make nuclear a worst case solution.

In the final analysis, transitioning from well-known energy sources will be accomplished either because we seek out alternatives or because we run out of primary energy sources. Better to transition and best to start soon. The high cost of transportation fuel today is a first warning of what the future will bring.

Over the last several decades innovation and entrepreneurship have generated multiple alternative fuel solutions including photovoltaics, wind, tidal and geothermal. Some of these solutions, such as wind, are closer to commercial use than others but all have potential to solve a part of the puzzle.

Perhaps the most challenging part of this inevitable transition will be managing the costs. Some experts have estimated that converting the current energy infrastructure to accommodate new energy paradigms could cost in excess of \$20 trillion in today's dollars. This immense task will be the work of a generation. Because it will take time and because the problem will be exacerbated by the increasing global demand for fossil fuels, we can expect the problem could become acute at some point.



## Conclusion

The economy at large has already embarked on a transition path to a future energy regime based on energy sources that do not include fossil fuels. The high and escalating cost of transportation fuels can be expected to continue to increase though when demand slacks off due to depressed economic activity (brought on by high energy costs) we can expect some price moderation. However, the nature of rising demand in the face of shrinking supply will always mean that fuel prices will continue to escalate.

This paper has focused on the transportation aspects of Peak Oil but because oil and natural gas are the feed stocks for many modern materials such as plastics and rubber as well as agricultural fertilizers and pesticides it becomes more important to preserve these organic chemicals by making the transition with all deliberate speed.

During the coming years companies of all sizes will demand technology solutions that help them reduce their reliance on transportation. As outlined above, solutions that reduce transportation demand will help organizations manage their prices better and thus attain better relative competitive positions in their markets. The CRM industry is ideally suited to perform well under these conditions and CRM vendors who seek solutions along these lines should be amply rewarded for their efforts.

## Further Reading

### Web sites

The Association for the Study of Peak Oil (ASPO) ([www.peakoil.net](http://www.peakoil.net))

International Energy Agency ([www.IEA.com](http://www.IEA.com))

The U.S. Department of Energy's Energy Information Administration, EIA ([www.EIA.DOE.org](http://www.EIA.DOE.org))

The Oil Drum ([www.TheOilDrum.com](http://www.TheOilDrum.com))

Save the Oil Foundation ([www.SavetheOil.wordpress.com](http://www.SavetheOil.wordpress.com)) and other similar sites

"The Hirsch Report", Robert L. Hirsch, SAIC Project Leader [http://www.netl.doe.gov/publications/others/pdf/Oil\\_Peaking\\_NETL.pdf](http://www.netl.doe.gov/publications/others/pdf/Oil_Peaking_NETL.pdf)

### Books

Hicks, Brian and Chris Nelder, *Profit from the Peak*, John Wiley & Sons, Inc., Copyright 2008 Angel Publishing, LLC.

Heinberg, Richard, *Peak Everything*, New Society Publishers, Copyright 2007 Richard Heinberg.



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