

Location, Location, Location: Disasters and Other Impediments on Supply Networks

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Abstract - In the wake of Hurricanes Katrina & Rita, every business must reconsider their supply network. Businesses employing Just-In-Time networks and Sole Source providers as well as those in a tight market or using non-standardized components are transferring a considerable amount of their business continuity on others. Knowing additional factors to use to evaluate suppliers and include in your request for proposals will be explored, as well as resources to evaluate those factors.

This presentation will discuss and explore location considerations that purchasing professionals should evaluate as part of their supplier criteria as every business has a location. Many location considerations will be examined. While Force Majeure can excuse a party for performing its contract, some locations are more susceptible to calamity than others. This "Disaster Awareness" is the first step for true Disaster Preparedness. By staying out of harms way, a business will have to prepare for fewer disasters and avoid the costs of both preparation and interruption.

Focus will be given to impediments as well as factors that may set one location apart from another. Resources on natural disasters, such as flooding and earthquakes, and where to find their probability are presented as well as discussions on emergency preparedness and disaster recovery for a location and a myriad of factors that could shut down a supply network or affect its efficacy.

Location Factors That Affect Business - Even the best laid plans can be interrupted. For a company, there are many factors, from blackouts to blizzards, which are out of their control. Most companies have come to embrace the concept of Disaster Recovery; however, have they really examined their most critical vendors and suppliers to gauge their disaster preparedness and recovery plans? Suppliers are taking a greater role in efficiency of production but, with that role, they carry a corresponding risk. One of the easiest ways to get out of a disaster recovery scenario is to avoid the locations where disasters are most likely to strike.

Many real estate location decisions are made on a monetary basis; however, they do not ensure that a business will have the best location. Business continuity should be one of the greatest traits of a building and there many factors that can affect it. The easiest ones to consider are the effect of severe weather and natural disasters on a location. The neighboring businesses to your location have a considerable effect on business continuity in both a positive and negative way. Other factors that can affect whether a business is operating are their service providers, the quality of their building systems and the availability of expansion space.

Preparation and evaluation are critical to business continuity. As an ongoing concern, companies should frequently review the business continuity and disaster recovery plans. Even

a company that has been in business in the same location for twenty years is subject to changes that could affect their business. The subdivision a mile away that altered the floodplain, the utility supplier who was brought by a large corporation or a location's roof on which the landlord deferred the maintenance could each interrupt business.

There are different factors for comparing locations across the country, a state and a community. Having to select between suppliers that are thousands of miles/kilometers apart presents different challenges than selecting suppliers within the same general community. While all the evaluation criteria should be considered, much of the information will be the same for locations in the same geographical vicinity.

Localized Natural Disasters are one factor that can affect businesses differently. While a hurricane may damage an entire region, tornadoes, mudslides or flooding can only affect a part of a community. While these natural disasters can be isolated to particular areas, the Federal Emergency Management Agency (FEMA) says that floods are the most common and widespread of all natural disasters--except fire. Floodplains can vary considerably from one location to the next and must always be evaluated.

The city where a business is located can also be an important factor. Each individual city, town or municipality in a community can have its own set of laws or codes that may impinge on where one could set up business. Some suppliers may be better equipped to meet changing product needs based on the "city" they are located. Consider:

- **Building Codes:** Can a supplier expand easier or quicker in a particular city. What are the obstacles to quickly build out or remodel a space now and in the future?
- **Environmental Considerations:** One city can have regulations in place to limit a supplier's ability to meet your needs.
- **Crime Rate:** A business located in a high crime area could experience costs that other competitors do not have. Thefts can also affect supply lines & lead times.
- **City Services:** Does one municipality offer more substantial services than others?

Another factor as important as disasters is the coverage of utilities servicing to a supplier. Nothing may be as important to business continuity. It is not just the cost of utilities but their availability. Different aspects of utilities to assess:

- **Provider:** Who produces and provides utilities for your supplier? Are they reliable?
- **Deregulation:** Are utilities open for deregulation for a location? Will fluctuations in utility costs be passed on to the buyer?
- **Continual Supply:** What is their provider's track-record for supplying constant, clean power? Blackouts and power surges can disrupt critical production.
- **Type of Utilities:** The type of utility used by a supplier affects their production. A business that runs on gas versus electric could have supply issues in one part of the world. Consider the different utilities utilized for your orders in addition to provider and reliability.
- **Water –** Will the area have the water your supplier needs to stay up & running? Water shortages via drought or overpopulation are becoming more commonplace. Is the supplier getting its water from a stable, long-term source? Does a real estate developer have the necessary utilities in place to allow your supplier's space to open or expand?

The list of considerations for a location is almost boundless. Manufacturing, Educational, Industrial, Data Processing and Hospitality firms will all have different needs for their locations, often distinct from each other. Some of their needs, such as being located outside the floodplain, will be universal while other will be unique to business segments and the firms within those segments

Impediments to a supplier's location - Thinking of the worst thing that can happen when examining a supplier will pay dividends for business continuity later. Finding all the impediments of a location along with their probability will also allow for a better evaluation of the location. Some impediments to consider:

- Large-Scale Natural Disasters – The probability for earthquakes, hurricanes or other potential disasters are as important of a factor as any.
- Weather – The weather can affect whether a business may be able to open, in addition to causing a catastrophic disaster. Certain temperatures allow for a labor shut down. A blizzard could close the highway. How *weather* affects your suppliers is important.
- Floodplain – A largely ignored issue until a flood occurs, floods can have major implications for a location. In addition to whether a building will flood, the floodplain's effect on adjacent space, utilities and the major roads that lead to your supplier's location can have as much to do with your supplier's continuity. *Examples of floodplains are examined in further detail.*
- Eminent Domain – With a recent Supreme Court ruling, the laws of Eminent Domain are expanding. A site next to a school or university is an example of one of the locations that could be acquired by the government agency. While unlikely, it is statistically possible.
- Local Hazards – What are the major hazards in the area? Is there a gasoline storage farm or a chemical plant few miles away? Is their building in the flight path? Using *Aerial Photography* can help you identify impediments that your supplier may not even recognize.
- Fellow Tenants & Neighbors – Who does your supplier share building space or the site with? One neighbor could flood their space. Another could drown-out their call center with noise? Another could interfere with their IT network? Is another storing biohazard waste?
- Terrorism Targets – Some cities or individual sites may be targets which must be taken into account as part of your emergency preparedness and business continuity.
- Facility Funding – Is the supplier using your contract to qualify for enterprise funds, tax abatements or other concessions or venture capital? Will there be negative consequences if your contract must be cancelled such as poor public relations?
- Possible changes for a location – Are their new codes or laws in place that concern your location? Is it possible that your location could be annexed by a neighboring city; raising taxes or changing services? Is it being added to the floodplain? What is being built or planned around you?

Things that can set a supplier's location apart - There are many traits about a location that make it more desirable over another. The value of some of these traits can vary for business to business and could be very low on a scorecard.

The attribute that may set a supplier apart from others is a commitment to contingency planning. This is a supplier who has committed time and capital to stay open. Here are some points to use to gauge a company's level of commitment to contingency planning:

- Does the supplier have a written disaster recovery that they can share? Does the plan list job titles or people, as positions change less frequently than individual persons?
- What is the emergency power capacity of your supplier? Do they have an uninterrupted power supply(UPS) &/or a generator on the property? If so, which systems are designated to be powered? What is the preventative maintenance schedule for their backup systems?
- What spare parts do they keep on hand for their machinery as well as building systems?
- Do they have a backup site to operate in a long-term incident? Is it a dedicated site or a shared facility? Is it big enough to handle their operations? If located out of the area, who will be staffing it during a large-scale disaster since employees may attend to families first?
- When was their last Disaster Recovery drill? Can you see a list of the action items?
- What plans do they have in place if they lose a critical supplier?

The supplier's building systems are vital. Critical systems include the HVAC system, the electrical system and its transformers (Were they installed for the desktop PC era?), pipes & plumbing and the roof. Inquiring into the age, condition and preventative maintenance schedules of critical equipment will indicate much about a location's reliability.

If your supplier does not own their facility, the terms of their lease become important in any long-term relationship. If the supplier is subleasing or does not have the right of first refusal over their current space, they could be forced to move in middle of your contract. Information about their property owner and manager is important as some cut corners on maintenance and capital items to increase income from their property. Building system failures often result from a lack of maintenance; leaving your supplier unable to function during a weeklong repair cycle. What type of image is the company trying to convey through its location? Are they paying more for a location (and driving up their costs) to have certain name in their address?

The history of the space is very important. Was the space converted from another use? If so, your supplier may have overlooked issues with zoning, building codes, building systems not intended for their current use, asbestos and/or sprinklers coverage. Documented proof the location is up to code and compliant with the Americans with Disabilities Act indicates the business will be able to adapt and retool with delay.

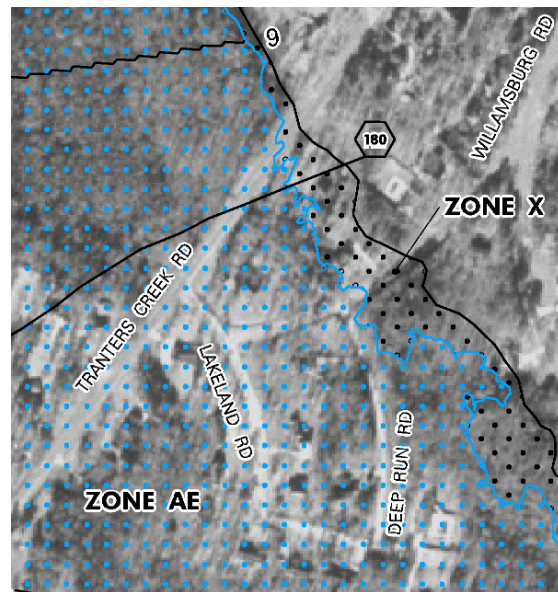
If your needs grow, will your supplier be able to get expansion space easily. The functionality of this space is another factor to consider. Does the location have enough loading docks to meet their commitments? Can the elevators in a location handle the dimensions and weight of the materials? Are the columns in the location spaced such that your material or new machinery will fit to specs (as opposed being assembled on the loading dock)? Can the floor handle the load rating (weight) of raw materials or the finished product?

Think about Product Quality... Is the location a good place to work? What is the Indoor Air Quality (IAQ) & Environmental Quality of a location? Not only should you consider how both could affect your products but also how they affect the productivity of the employees. Carbon dioxide levels can rise in the building throughout the day; while it may not affect widgets, IAQ may affect quality of the product produced. What is the quality of the light, including natural light, in the space? Are the life safety systems fully functional? Do they have a history of accidents or EPA or OSHA violations? Cleanliness & Safety improves moral and reduces absenteeism. With talk of the pandemic flu, a good cleaning regiment may help avert it.

Sources of Information - This presentation offers examples of different information collected about locations. The information can be drawn from many sources and applied to locations in the United States of America. Internationally, much of this information should be found at parallel government agencies or universities in that country.

Multiple Hazards: This site offers, as the name states, multiple hazard information at <http://www.hazardmaps.gov/atlas.php>. The site offers information on Floods, Earthquakes, Hail Storms, Landslides, Tornadoes, Hurricanes, Tsunamis, Volcanoes and Windstorms for the USA and should contain more worldwide information over time. The site may not provide high levels of map detail but offers valuable information on many hazards. The site requires an address & zip code to get started but only offers views of one hazard at a time.

Floodplains: Floodplain information can be the most sensitive piece of information about a potential disaster. Floods can wipe out only half of a street and, as part of FEMA map modernization process; the flood zones are becoming more predictable. Be warned, the floodplain changes all the time through development and other factors. A property out of the floodplain today can be in the floodplain after development nearby. Consider the major thoroughfares when evaluating locations, as a location is less valuable if people cannot reach it. The maps are more detailed than the flood maps on the Multiple Hazard site above. Info on Floodplains:



A section of North Carolina FIRM Panel 5666

- **Tutorial** – To better understand how to read flood maps, FEMA offers a tutorial at http://www.fema.gov/fhm/ot_firmr.shtm if you have the software (free download). The FIRM box launches a tutorial over the basics of flood maps. A text version is also available.
- **Flood Maps** – Flood maps can be viewed for free on FEMA Map Service Center. This very long link will take you to the FEMA Flood Map Store where you preview: <http://store.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>. (Be prepared to disable pop-up blockers)
 - On the right side under “Product Search by Address”, select Public Flood Map (the default for part one) & enter your address & zip code under part two.
 - You will receive “Map Search Results”. From this page, you can view the map(s) by clicking the green circle under the view column. If no circle appears, either the map is not available on-line or no map was produced as the entire panel is in the same flood zone & the index panel (see tutorial) indicates the zone for your specific panel.
 - A pop-up window will appear entitled “MSC Viewer”. Using the tools on the left side, you can enlarge the map to view your location in greater detail. Be sure to look at the “North Arrow” on the bottom right of the map as north is not always at the top of the page. Please note: Your street may be *not* displayed on many maps.
 - You can print a map covering your location using the Make a FIRMette button.

- To orientate yourself on the flood map, you can use an [on-line mapping site](#) to better identify streets or FEMA's Map Search feature which is a link located near the top of the Map Service Center page that combines streets with flood panel boundaries.
- If your address does not result in a map or the correct map, verify your address by using the [Find a ZIP Code](#) link at www.usps.gov.
- Experts – Is it too close to call? You can have survey done of your property to show the floodplain status. A less-expensive option would be to require FEMA's standard flood zone determination form available from a certified flood zone determination company.

Earthquakes: The USGS provides maps that show earthquake probability. Local maps can be accessed directly at <http://eqint.cr.usgs.gov/eq-men/html/neweqprob.html> by entering a zip code or latitude and longitude as well as a number of years. If you are looking at a 10-year agreement, enter your zip code and 10 years for a map delineated by probability.

Weather: The National Oceanic and Atmospheric Administration (NOAA) offers several pieces of information at the website <http://www.noaa.gov/>. Most US television stations verify their forecasts via NOAA. There are dozens links to weather information at their site.

Aerial Photography: Aerial photography can be useful to identify nearby hazards, such as gasoline storage tanks. There are many sites that offer free aerial photogrpahy, including:

- [Google Maps](#) - <http://maps.google.com/> offers an ever expanding library of maps and aerials from around the world. The details for areas outside the USA are not as detailed.
- [Google Earth](#) - <http://earth.google.com/> combines satellite imagery, maps and the power of Google™. Words to not do it justice; it has to be seen to be believed.
- [Terraserver](#) – <http://terraserver.com/> & <http://terraserver-usa.com/> offers aerials for the entire world & the USA.

Contingency Planning - The [Association of Contingency Planners](#) (ACP) is a non-profit trade association dedicated to fostering continued professional growth and development in effective Contingency & Business Resumption Planning; available at <http://www.acp-international.com/>.

Conclusion - Every business has its core functions which will dictate the factors are important and inconsequential about a supplier's location. The importance is to identify the criteria for a supplier's location that are important to your business. Your criteria should be weighted against keeping an uninterrupted supply chain, minimizing risks and weighting the costs versus the benefits. Include in your requests for proposals that criteria that is important to you as it can also reduce the amount for additional research you may need to perform.

A company's suppliers also have a duty to manage risk. If they are part of a manufacturing chain or they subcontract their work, the greatest risk to a business is at the weakest link. Each entity involved brings risk to your enterprise so an evaluation of a business partner does not always stop at their front door. You should share your expectations with your suppliers as you may need them as much as they need you.

Of the ideas presented in this presentation, the author hopes the attendees will exam the floodplain status and disaster recovery steps in place for all their suppliers' locations. If businesses in the Gulf Coast could say anything, it would probably be that it was better to be over prepared than to not be; at least the ones you can locate.