AGENDA NO. ___

CENTRAL BASIN MUNICIPAL WATER DISTRICT

JANUARY 5, 2005 - Water Resources
Gonzalez, Vasquez
JANUARY 24, 2005 - Board Meeting
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INFORMATION CALENDAR

ARCTIC GLOBAL WARMING

SUMMARY:

Early in November, the Arctic Climate Impact Assessment (ACIA) report was released. Funded by eight nations with arctic territory (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and United States), close to 300 scientists studied the impacts of global climate changes in the Arctic region.

The four-year study revealed profound impacts and environmental changes in the Arctic as a direct result of increased emissions of carbon dioxide and other greenhouse gases from human activities. The ten key environmental findings from the ACIA include:

- Arctic climate is warming and glaciers are melting,
- Arctic warming has worldwide impacts,
- Arctic vegetation zones are shifting,
- Changes are occurring in animal diversity, range, and distribution,
- Coastal communities have an increased exposure to storms,
- There is an increase in marine transport and access to resources,
- Communities are disrupted by the thawing ground,
- Indigenous populations are challenged/impacted,
- Ultraviolet radiation levels are elevated, and
- Global warming impacts are occurring in combination with multiple influences.

In the upcoming century, it is projected that the contribution of greenhouse gases will continue to accelerate, impacting not only the Arctic region, but the world in general. Impacts will be seen in plant and animal species, population sizes, growth rates, plant flowering, animal migration, weather patterns, ocean levels, melting glaciers, and all the way down to local water supplies.

Does global warming affect overall precipitation?

Yes. Precipitation is impacted by the elevated temperatures from global warming. The year 2004 is going down as the fourth hottest year for the world since 1861 – nine of the ten hottest years on record occurred in 1995 or later. From 1900 to 1975, the planet warmed at a rate of roughly one degree per century. Since 1975, global warming has accelerated the rate to three degrees per century. Even with the most mild projected temperature increases, storm frequency and severity will increase, as well as floods, heat waves, and droughts. Models cannot predict exactly where these events will take place, but as global warming alters the jet stream and ocean currents, some regions will be wetter, while others drier. This has a direct impact on local water supplies. Drier conditions could also lead to increased fire risk whereas wetter conditions can attract more insect pests.

Does global warming affect snowmelt runoff?

Yes. Glaciers store vast quantities of water. More than half of the world's population relies on water that originates in mountain rainfall runoff or ice melt. In some areas glaciers provide a year-round water supply while in other areas glacial melt is a dry season water source. Warmer temperatures in winter increase mountain runoff in the winter months, but reduces water availability in the summer months. Excess mountain runoff in winter can overflow rivers compared to the drier summer months where the low-flows can lead to drought stress and vulnerability to fire, disease, and insects. Not only is the water supply impacted, but salinity levels, hydroelectric power, fish habitat, farm irrigation, river transportation, and recreation will also be affected.

Additionally, increased snow and glacial melt that flows into the ocean contributes to an overall rise in sea level. This in turn, may cause beach erosion, coastal property flooding, loss of wetlands, contamination of drinking water, and the destruction of spawning grounds.

Do rising sea levels affect seawater intrusion into fresh aquifers?

Yes. As the ocean level rises and coastal communities continue to pump water from aquifers for growing populations, salt water intrusion into coastal estuaries and potable water aquifers increases, impacting the available water supply.

Does global warming increase evaporation (thus decrease freshwater supplies)?

Yes. Even with possible increases in precipitation, global warming will increase evaporation rates to a degree where lakes and rivers will become shallower and warmer, affecting aquatic life, water supplies, and increasing possible invasive species and algae blooms. Communities should begin planning now for lower lake and river levels.

Do trees slow global warming down?

Although the amount of carbon dioxide currently being produced greatly exceeds the ability of the earth’s vegetation to process it into oxygen or store it as carbon, trees still play a major role on slowing global warming. Large trees can store approximately 1,000 times more carbon than small trees. If every American family planted one large tree, carbon dioxide in the atmosphere would be reduced by one billion pounds annually. However, trees do release carbon when they die, so protecting existing trees is also critical to reduce carbon dioxide levels, and in a way, global warming.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on January 5, 2005 and agendized to the January 24, 2005 Board meeting as information for discussion.

RECOMMENDED MOTION:

This item is for information only.

EXHIBITS:

None.

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