

Malcolm Gladwell observed that 'we live in a suddenly serious time, where people have an appetite for intelligent, thoughtful explanations of consequential topics'.¹

Energy is one of the consequential topics of this suddenly-serious time. Of the various sources and uses of energy, perhaps the most significant in its impact on our collective future is electricity—the fuels used to generate it represent about 40% of all energy consumed in America. Electricity can do things that no other fuel can do, since virtually all other fuels (coal, oil, natural gas) only produce heat. Heat is great, but it won't run your cell phone, take a photo, play the radio, cool your beer, run an elevator, guide a plane. Burning carbon to create heat is what cave men did to stay warm. That it always works and requires no moving parts is an advantage. That we may be unwilling to imagine our lives without unlimited quantities of heat-generated electricity, given a growing awareness of the downsides inherent in electricity's current system, is a significant disadvantage.

Waste: in the furnace, in the air, in the ground

Over 90% of the electricity² in America is made with heat-producing fuels that boil water to make steam. The majority (70%) of steam-generated electricity in America produces carbon dioxide, while 20% of our electricity comes from nuclear energy, which produces essentially permanent toxic waste that no state is willing to store. Whether in the ground or in the air, we make waste to make electricity.

50% of the electricity generated in the U.S. is created through burning coal, a carbon-based fuel. About 20% of the electricity in the U.S. comes from burning natural gas, another carbon-based fuel. There is no operational carbon capture and sequestration (CCS) capability available to any U.S. fossil-fuel burning power plant that would absorb, store, reduce or eliminate carbon dioxide. There are no regulations restricting the quantity of carbon dioxide that coal or natural gas plants emit, nor is there any financial cost to an owner/operator for emitting any quantity of carbon dioxide from fossil-fuel powered electricity generating facilities. About **two thirds** of the inherent energy in coal is wasted in the generation of electricity—only 1/3 of the coal's energy actually converts to electricity.

Climate scientists are uncertain as to the expected rise in earth's temperature as a result of the increase in carbon dioxide into the atmosphere. Climate models of the earth consistently under-forecast the rise in temperature due to increases in atmospheric carbon dioxide (or its equivalent, described as CO₂e). Globally, glaciers are melting faster than

¹ <reference: Remnick's colleague Malcolm Gladwell, author of the bestselling books *The Tipping Point* and *Blink*, says, similarly, that 'we live in a suddenly serious time, where people have an appetite for intelligent, thoughtful explanations of consequential topics'. from: <http://www.guardian.co.uk/theobserver/2006/sep/10/observermagazine> >

² Electricity is measured in kilowatthours. Watts are a measure of electrical energy needed to perform a task. [James Watt](#) invented the steam engine.

predicted. Calculations reveal that there is already enough latent heat in the atmosphere and oceans to melt both polar ice caps. A transition strategy to reduce carbon emissions to 450 ppm CO₂e by 2050 (about 40 years from now) has been developed by the International Energy Agency (IEA). This strategy assumes 1) that the average global rise in earth's temperature will not exceed 2°Celsius (over pre-industrial temperatures) if human production of CO₂e does not exceed 450ppm, and that 2) really damaging effects of global warming will occur above a 2° Celsius increase. In 2008 the global average ppm of CO₂e was 387, the highest value it has been in 650,000 years. Globally, CO₂e ppm goes up about 2ppm per year and the rate of increase is itself increasing. Recent literature suggests that without much more aggressive reduction in the production of CO₂e, the planet will have much higher than 450ppm by mid century and concomitantly a much higher than 2°C rise in average temperature.³

No one knows the degree of “damage” that earth biological systems may suffer as the global average temperature increases. No one knows how that damage will impact water supplies, food production, storms, ocean currents, ocean water levels, etc. It is predicted that it will take earth about a thousand years to restore carbon dioxide to pre-industrial levels assuming all human-induced carbon dioxide, created principally from burning fossil fuels, ceases. Consequently, it would take at least a thousand years for temperatures to decline to pre-industrial levels. That is, once significant damage has begun, it cannot be reversed by any known technology quickly. Geo-engineering ideas have been proposed, but their expected impacts are speculative, their costs are expensive, and the size and scope of their negative effects are potentially irreversible.

Don't Know

One might well wonder why we are so unwilling to take assertive if not aggressive action to protect ourselves and our children from what appears to be perhaps the most consequential topic of these suddenly-serious times. The first reason lies in the verb “appears” in the previous sentence. Carbon Dioxide is invisible. We can neither see, taste, smell, feel or hear it. Our biology can never *experience* carbon dioxide. In high dosages it can interfere with respiration, but this does not occur because it is lighter than air, so it rises way above our noses. It's negative effects are thus entirely outside the immediate-danger-sensing biological equipment we are born with. Without sophisticated instruments, complicated measurements, scientific models and a rational / reasoning mind set, we would never know the relationship between our cave-man water-boiling behavior and why glaciers are melting all over the planet. The relationship (boiling water = melting glaciers) is suspect perhaps mostly because it is new (a few decades) and its implication on our way of life is so profound. Contrast our technologically-dazzling bleeding edge tools with our ancient biology. Our physical programming is written in dna instructions each of which takes a minimum of millions of years to develop or change. We are hard wired for visible danger and very soft wired for anything that has zero

³ <”A Vast Machine” >

impact on our entire set of sensory tools. Worse, the implications of acknowledging that our relatively-innocent behavior (we've been burning carbon as long as we've been identified as a species) is now seriously threatening the biological systems we have become entirely dependent on for our way of living, is overwhelming. We might as well have been told, collectively, that we have cancer. Perhaps more damaging (and accurate), we might as well be told that we *are* cancer, that we are not only the victims of a scourge, we *are* the scourge.

Who is going to march in that parade?

The parade is happening, and we are all marching in it, whether we admit it or not. The first requirement is to simply open our eyes. Pretending that glaciers aren't melting, or that scientists are idiots, or that carbon dioxide levels are not rising, or, if they are, the data is irrelevant, or that we are not responsible for those rising levels, is consistent with stage one of a five step process that we are collectively engaged in.

The steps were written a few decades ago by a cancer doctor in a book entitled "On Death and Dying".

The first stage is denial.

We're dealing with invisibility here, a term rich with text and sub-text, a metaphor for the times. When your doctor tells you that "the blood tests" or "the X-ray" or "The MRI" show something, we are in the same invisibility land as CO₂e. We don't *feel* anything, or if we do, it is really not that bad. First step: the system is wrong. "The lab mixed up the blood test. The X-ray machine is grossly out of adjustment. The doctor is an idiot. The MRI is run by computers or overworked and underpaid technicians and they always screw up. There was a power blink when the diagnosis was made which caused all the equipment to give erroneous answers. I don't smoke. I am not overweight. I don't drink (much). My parents lived into their 90's. I get some exercise. I don't eat junk food. I take vitamins. I get enough sleep, mostly. I have done nothing to deserve this. I believe in cause and effect: I've been good, therefore I can't be sick. You, doctor and lab equipment and other clowns in the medical profession, you are wrong."

There is a huge difference between personal and global cancer. I'm using the term "cancer" to reflect a significant life threatening situation requiring generally unpleasant, maybe *really* unpleasant, intervention. At the personal level, we can't escape the responsibility as to how we will respond, and our response (children excepted) is entirely our own. At a national or global level, we can pretend to escape our responsibility as to how we will personally respond. It's the other guy's fault (he drives a Hummer). It's the Chinese (they're building a coal fired power plant every *week*). I don't need to do much, indeed I can't do much. My participation in the big global mess is just *tiny*. I don't matter. Even if I do ride a bike, hang out my clothes to dry, wear a sweater, turn out the lights,

everybody down the street is living like there is no tomorrow. I'm sacrificing, they're not, and the only loser here is me.

Don't want to know

By the end of 2010, the U.S. Senate had briefly considered, and rejected, legislation to start pricing carbon. Free carbon means we can collectively use the atmosphere as our CO₂e garbage dump as we've been doing, as a species, for a million years. For well over 99.9% of the time that we've been on earth, it didn't matter. Now, in the space of a few decades, it does. Carbon pricing implies to many that our entire way of life will change, negatively, immediately, and, like anti-drug campaigns, the street phrase is "just say no." Without carbon pricing, our entire way of life will change, but it will change slowly, tomorrow, and maybe not so badly (who knows?) Besides, why should we price carbon when (pick your favorite country to hate) they don't. Carbon pricing is visible. Carbon Dioxide is not.

Like the sightless soundless fog of communication signals that blanket the earth, invisibility extends to inhabit more and more of our lives. Nowhere does our technologically-created invisibility cloak lay over more of our lives than through Father Electricity and his vastly diverse progeny.

Like carbon dioxide, you can't see, smell, feel, taste, or hear electricity coursing through the veins in your home, office or store. Most can't experience electricity taking the form of wi-fi or cell tower radiation, or a thousand other wireless forms (radar, tv, radio, satellite, military, gps, xrays, cat and mri scans) that we travel through 24/7. In general, it appears electricity in its various forms has no harmful effects per se—it's been around for a hundred years and, like the public water supply, seems ubiquitous, safe, uniform in quality, always available and incredibly helpful.

I'm not making a case against electricity. Perhaps some day it will prove as archaic as horseshoes or whale-oil lamps. However, now it is the fuel of the present and future: it is the only fuel that inherently avoids undesirable byproducts like carbon dioxide and spent nuclear fuel. We can make it without boiling water, or, if we choose to boil water to make it, the way we boil that water need not involve creating a global mess for our descendants.

As a species and as a culture, we will transition to electricity generated without fouling our nest. The process has already begun. My concern is that we are moving too slowly through the transition stages so clearly articulated by Kubla-Ross in her work on cancer patients. Prior to the denial stage, mentioned above, is the don't know and don't care stage, when we have cancer (or in our developed-nation culture), *are* cancer, and don't know it. Like early stage breast cancer, there is no pain, no lump, no nothing, most particularly, no idea. Regarding electricity, we have created a huge infrastructure around the idea of central production, distribution, availability, reliability, and really low cost.

The attitudinal infrastructure we've embedded is one of abundance limited only by our ability to pay for the equipment that uses electricity and the cost of the electricity itself. Attitudinal infrastructure looks backward, reflecting our habits and attitudes that have been constructed by the culture. Aspirational infrastructure looks forward to what we aspire to. Unless otherwise informed, our aspirations generally follow our attitudes. Regarding electricity, if we grew up in a culture that celebrates abundance and has minimized, ignored or denied what economists call third-party costs, or side effects, or, more commonly, pollution, while building a system that inexpensively supports a staggeringly wide and growing selection of tools and toys, who would volunteer to step off that path?

Removing the don't know barrier

I've mentioned some bullet points earlier. Today most electricity in America comes from carbon based fuels. A fifth of our electricity comes from nuclear power. Both of these fuels create unpaid-for side effects. The carbon dioxide externality contributes significantly to global climate change. Electricity can be created without burning carbon fuels. Burning those fuels wastes well over half of the heat and chemical energy in the fuel. This waste may have been forgivable in an earlier time but it is the engineering equivalent of the obesity crisis in America: no longer acceptable. Waste has cultural permission. When the permission is withdrawn, as it has been over e.g., tobacco, sulphur dioxide, discrimination and child abuse, the culture pretzels a while while aspirational infrastructure rewires attitudinal infrastructure. This is generally messy and lengthy.

Waste occurs in both the production and use of electricity. Of the $\frac{1}{3}$ of the fuel that gets turned into electricity and makes it to the outlets in your home, another 20% or more disappears without giving you anything. The waste before you receive the juice is collective waste harming everyone; the waste after you get it is on your nickel. (Note also that because it is waste, it adds to collective harm as well.) Waste occurs through inefficiency (e.g., inadequate insulation and inefficient appliances) and unused services (leaving a light on in an unoccupied room, leaving a computer on 24/7). It also occurs because the true cost of producing power varies significantly during the 24 day. In effect everyone who pays a flat rate for power gets a subsidy for using electricity during peak periods. It may cost the power company \$.50 a kilowatthour to make power at 4pm on a hot day, but you pay only \$.10 a kilowatthour. You have no price signal to direct your purchase, so you keep your air conditioner humming along. The problem is that millions of other homes and businesses are doing the same thing, requiring the production system to crank to the max and hope they have enough power to avoid a blackout. Not only do you not have a price signal that might induce you to balance your power consumption to the true cost of the power (even if that 'true' cost still does not include the cost of the damage to the planet's biosphere from global climate change), you do not know how close the system is to failure. (Whether you would turn up the temperature of your air conditioner even if you knew the system was at 98% of capacity and it was only noon is another consideration. If you were paying more for that power you might. If you were

not, you might, along with millions of your neighbors, play the odds that you might stay cool or you all will suffer together in hot darkness. Generally, *my* being cool is more important than *all of us* being hot.)

I have been receiving emails announcing grants and activity at DOE's [EERE](#) (Energy Efficiency and Renewable Energy) web site for well over a year. Emails come in at least once a week, loaded with summaries of how hundreds of millions of federal dollars are being allocated for energy efficiency and renewable energy projects all over the country. These projects and grants have one thing in common: they are all directed at supply. The prevailing ideas are: we need more electricity, we need more energy, we need to make better use of the energy we have. The sub-text is present by its absence: there are no discussions, no grants, no activities, no "energy" directed toward demand, i.e., the attitudinal or aspirational infrastructure that creates demand for electricity, and therefore the requirement that supply be forthcoming. Lest the reader nick me for conveniently ignoring the funding and deployment of Smart Grid technologies, these are efficiency, system stability and reliability technologies. I have no argument with the Smart Grid and all its emerging family members. The invisible and undiscussed sub-text that I refer to is that we as a nation can and should roll on with unquestioned allegiance to our century-old attitudinal infrastructure idea of unhindered consumption of electricity, built on deeper ideas of abundance, freedom, independence and exploitation (of Nature, anyway) to offer everything we can extract from her.

I think we are in a transition zone regarding that allegiance. I image Wile E Coyote having chased the Road Runner off a cliff. He is still running straight through the air as if supported by an invisible path. His energetic running seems to temporarily maintain his altitude. At some moment his facial expression changes. An idea has come to him. Part of him (intuition?) senses that something is amiss in his frantic running. He seems to simultaneously slow down—as if contemplating that his speed may be counterproductive—and look down. A new awareness comes over him, suddenly and intensely, nonverbally saying "OMG, I'm not over ground anymore". Gravity, which he had suspended for a moment through impossible intensity, reasserts its quiet dominance. The camera moves from a side to a top view as we watch him descend like a rock some impossible distance followed by a small puff of smoke indicating his return to earth.

An increasing proportion of Americans are at this new-idea moment. Ill-formed notions of balance ache to emerge. Something is amiss. They may have looked down, or may be wondering if they dare look down. They haven't started to fall. They haven't even come to understand that they are not on the ground. I see it as a transition from cowboy (think Marlboro Man) to a farmer (think [Joel Salatin](#)). (Who?? Here's a sentence from his web site: "We are in the redemption business: healing the land, healing the food, healing the economy, and healing the culture.") Joel, featured in Michal Pollan's "Omnivore's Dilemma", represents Wile E. after he has crashed to earth, dusted himself off, and realized that chasing the Road Runner (and all that a consumer culture represents) is

entirely insane. Cowboys consume the earth, perhaps trash it (metaphorically) then move on to some other place to consume. Farmers don't move. They love rather than exploit. They are part, not separate. America was founded by farmers. As a culture we've moved toward separation and exploitation in our "pursuit of happiness fueled by carbon and uranium" phase, only now slowly coming to understand that consumer-based happiness doesn't work either personally or collectively.

The deepest issue is our relationship with ourselves, reflected outward as an issue of our relationship with the earth. Are these relationships harmonious (meaning: sustainable, balanced, forgiving, generous, respectful) or are they exploitative, meaning: take all you can, when and where you can, as fast as you can, to make as much money as you can, since the earth doesn't bite back and if you don't take it, someone else will. There are a few places in between, but the choice is largely one or the other.

Ask any counselor (or look honestly at your own life): change takes work, especially if that change appears to involve discipline, sacrifice or self-restraint. Demand for electricity follows the attitudinal infrastructure emerging out of our 200 year old carbon-fueled excitement. The staggering value-added that electricity brings to America's table puts it right up there with cocaine. Actually alcohol might be a better image. Cocaine may be illegal but it doesn't harm a human anywhere near as much as alcohol does, yet alcohol is legal. The image I'm working on here is addiction. We have created a system that is so helpful that we cannot imagine life without it, and we want it pretty much in unlimited quantities. Once you have air conditioning, you don't give it up easily. Same with wi-fi or smart phones or gps, none of which existed when I was a kid or for any generation of humans on the earth prior to the last, say, approximately 20 years. How did they live without these things? It's easy to imagine your grandparents as all but Neanderthals, living a stone aged existence without Facebook.

Like "[the story of stuff](#)", the story of electricity reveals hopes that went sour. In the 1950's, "atomic" energy was going to be the positive side of the atom (with memories of the atomic bomb still fresh in the national psyche) and was going to be "too cheap to meter." By the 1970's the reality was that nuclear power didn't pencil out, even without nicking utilities for the cost of accidents or storage of really nasty waste. James Hansen began the parade on the problems of carbon dioxide about 2 decades ago. A 2011 poll shows that 36% of Americans do not believe global warming is a serious problem; about half of those surveyed think global warming is not caused by humans. I interpret these to measure the degree of denial. Those opposing Smart Meters and Time of Use rates are in the anger phase. When the inexorable force of state public utility commissions craft new regulations enabling time of use (TOU) rates and net metering, the bargaining phase will begin. When the cost of power rises and blackouts happen more frequently, depression will take place. Finally, perhaps 30 or 40 years from now, we will emerge into acceptance.

The question is: do we have to go through all four pre-acceptance stages using the same overused and immature drama-queen behaviors common to 3 year olds? Do we have to delay our transition to a sustainable electricity system simply because we are addicted to an unsustainable one and can't perceive (yet) the advantages of offering our descendants an aspirational infrastructure that elevates imagination and cooperation while molting unsustainable consumerism? If we misjudge the unprecedented impact of our CO2e binge, who—really—is going to suffer?

Following the path of most resistance, I choose to take on the challenge of building a transition pathway for the residential electricity consumer toward a sustainable electricity system. There is a huge opportunity for deliberately choosing conservation practices that transition our attitudinal infrastructure to one that aspires for, and delivers, immediate, low cost, high impact results. There is much waste in the residential consumption of electricity which, if eliminated, would buy a decade or more of time while we transition to renewable resources, saving billions of dollars of investment in at-best transitional and certainly legacy systems that pollute air, water and land, create security risks, and lack innovation and imagination.

Will you welcome please the heroine who will help you take those Steps on Your Way To the Newer Cleaner Leaner Fresher You?

Goldilocks.

Yes she has some challenges: she broke into a home, trashed some furniture, was seemingly arrogant and disrespectful. But she did have standards. Everything she tested had to be "Just Right". Too much was as unacceptable to her as too little. For many Americans, Too Much is the result of addiction to a deeply flawed marketing effort: happiness comes from stuff. More happiness comes from more stuff. It's not true but if you've been fed this message long enough and in many formats for almost everything, it becomes your attitudinal infrastructure. Goldilocks, like the blond iconoclast in Apple's 1984 Superbowl ad announcing the Macintosh, breaks the trance. Too much is too much. She's a standin for the kid in the Emperor's New Clothes.

She can change the aspirational infrastructure from planet-habitat-destroying Too Much to a refreshing Just Right. She leads the parade out of somnambulant addiction-land (subdue the earth) to awakened acceptance-land (of the earth, by the earth, for the earth). This is not sacrifice. This is strategic. What we are doing right now by consuming more than the earth can generate is sacrifice, but it isn't **our** (adult) sacrifice: it's our children and grandchildren's sacrifice. For all our expressed concern about the importance of protecting our children, we are collectively expressing denial-driven hypocrisy. At a minimum we should at least own this truth.

A hurdle in dragging Goldilocks onto the stage of our Electric Aspirational Psyches is that there's really no drama in the story. We have created a huge industry in storytelling: it's maybe the biggest gig going in America, whether it takes the form of news, or movies, or the behaviors of the glitterati, or sports, or new products, or soap operas, or reality shows, or... Every day we stab our adrenals as often as possible, generally through a collective media format (you know what your favorites are, and every one of them runs on electricity). If it bleeds it leads. Yet the waste that bleeds your pocketbook every hour in your home is entirely invisible. Finding and fixing that blood-letting does not involve rocket science or, sadly, drama. There's just no story here. Except, perhaps, that if all that bleeding were added up, it would be seen to represent a bushel full of 500 megawatt coal fired power plants. This is bleeding that buys you nothing, but your wasted electric blood is both painless and invisible, and your neighbor's wasted electric blood is invisible, and the power plant's carbon dioxide is invisible, and the transmission line losses bringing that power to you are invisible, and even the two thirds of the heat value of the coal that simply disappears in the conversion of water to steam is invisible, and vampire loads in your house are invisible, and your inefficient old refrigerator's extra power requirement which buys you no cooling is invisible, and have I bored you yet?

As a consumer, you can't see touch smell hear or taste this invisible electric wasted blood (perhaps my attempt at characterizing spilt blood as an image of electricity is an unconscious and infantile attempt to bring visualization to your thirst for drama?) You also have no idea how much your electricity appetite (wasted or not) dips relentlessly in the electron pool coming down the (generally invisible) wires into your home, and certainly you don't know what the cumulative appetite of a million electricity-eating piranhas (masquerading as homes) has on the coal-eating behemoths that are cranking out electron food on any given hot afternoon.

I'd like to change all that.

Goldilocks had something else besides confidence in her Just Right standard. She had curiosity. I believe we could travel **far** down the Just Right road (assuming we skip all the pre-acceptance stages, skipping the Wile E crash and burn phases, the drama, the wailing, the noise and the antics which gave rise to Shakespear's "a tale told by an idiot, full of sound and fury, signifying nothing") by ramping up something everyone has: curiosity. In this case, it would express itself as a variant on the puzzle often seen in the comic strip section of the newspaper which asks "What is wrong with this picture?" The variant I propose is a much more difficult one: "What is missing from this picture?" Here, we start by presuming something is missing (who does that??) We presume that what is *wrong* is what we *can't see*. In the world of electricity, it is not only electricity that we can't see, but particularly the waste that we can't see. How do you see something that is not visible? You imagine its possibility and you look for it.

Yes, I know you can't really see it, so even if you thought you found it, how would you know? Here's where biology has to accept rationality: you'd have, get, make, borrow, use a tool. Can't see inside your body? Have a CAT scan. It's faster and far less inconvenient than cutting yourself open. Can't see electricity, or even more daunting, wasted electricity? Get a 'wasted electricity detection tool'! Do they exist? Well enough. Thermal imaging cameras will show you waste in the walls and ceiling of your home. Just looking at the light bulbs will tell you whether they are CFLs or incandescents. Having an energy audit will serve as an opening appetizer for your curiosity dinner. Old appliances generally mean wasted power.

All of what I've mentioned in the previous paragraph is available at virtually every electric utility and DOE website in America. Nothing new. The curiosity component needs to go past the obvious, easy stuff. It needs to go past standard-issue behavior changes too, like turning off lights in empty rooms, or drying your clothes on a line or at least during off peak periods, or washing clothes in cold water. *It needs to engage yourself in a conversation about what Just Right really means to you* and what (eyes roll back in head) addictive attitudinal expectations you have and how much (eyes roll further back in head) you want to aspire to The New Goldilocks-Infused You.

Really big picture: America has 4% of the world's population and uses 30% of the world's resources. Sustainable? No, at least not without heavy weapons. Fair? No. Do we have a transition plan to balance our national population (all men are created equal, nu?) with our global resource consumption? No. This observation goes way beyond electricity. Still, we can demonstrate our Goldilocks nature, our curiosity and then our innovation and imagination, to quickly move in the Just Right direction.

2x4 to the head:

Here's the really short version.

1. Coal and nuclear don't pencil out once subsidies are withdrawn to fairly level the electricity playing field. They *really* don't pencil out if one honestly considers the right way to go forward.
2. Demand controls supply—lowering demand lowers supply. Demand reduction is the elephant in the living room.
3. All electricity is not created equal. Aside from a denial-based refusal to recognize the external costs of steam-driven production, demand patterns result in dramatically different electricity production costs at different times of the day. Electricity supply costs at 4am are cheap; at 4pm they are expensive, maybe 10 times or more per kWhr. Almost no one knows this and virtually no one pays the actual cost of production at the time of consumption. Goldilocks would disapprove.
4. One way to determine if you are addicted is to remove the source and see if you experience withdrawal. Can you turn off: A/C? Facebook? Email? TV? Cell phone? They all use electricity. They all didn't exist when your grandparents were kids.

5. Although you can't see it, your daily personal electricity consumption adds up because there are millions of you. It further adds up because everything you touch is pressure-soaked in electricity (gasoline, food, clothes, meals out, shopping, air travel, photos) and there are millions of you wanting, using, consuming all of these simultaneously. Think of an urban freeway at rush hour. Every car wants to use the same limited resource. Now cover all vehicles (except yours) with Harry's Invisibility Cloak. They're still there, but you can't see them. The freeway looks pretty empty! A quick trip to work! You buzz down the on-ramp to discover that the entire freeway is completely gridlocked—a parking lot. Demand exceeded supply. At least an urban freeway can slow down—the Grid Freeway runs either full on or totally off.
6. The way out is less—way less—about technology and more—much more—about aspirational infrastructure. *Immediate and significant demand reductions cost next to nothing, require neither hardware nor college-level training, and are staggeringly scalable.* They also lack buzz. Engaging a conversation about electricity has a higher yawn factor than watching grass grow. The addiction barrier is that much bigger because we *so want* the story elements of trial and redemption: running your dryer at 7pm, day after day, in order to reduce peak load on the system is going to need a **lot** of Pixar mojo.

I need your help. My grandchildren need your help. Your grandchildren, actual or virtual, need your help. Rocket science not required. Coffee, curiosity and imagination are the only prerequisites, freely available to everyone. Waking up and smelling (and then saving) the roses is waste and watt free.

In addition to curiosity and a thoughtful middle-way standard, Goldilocks had initiative.

What are you wasting for?

Appendix

Fuel for your journey:

"Another factor in maintaining balance involves the element of time. As we peer into society's future, we -- you and I, and our government -- must avoid the impulse to live only for today, plundering, for our own ease and convenience, the precious resources of tomorrow. We cannot mortgage the material assets of our grandchildren without risking the loss also of their political and spiritual heritage. We want democracy to survive for all generations to come, not to become the insolvent phantom of tomorrow.

"Down the long lane of the history yet to be written America knows that this world of ours, ever growing smaller, must avoid becoming a community of dreadful fear and hate, and be instead, a proud confederation of mutual trust and respect.

"Such a confederation must be one of equals. The weakest must come to the conference table with the same confidence as do we, protected as we are by our moral, economic, and military strength. That table, though scarred by many past frustrations, cannot be abandoned for the certain agony of the battlefield."

Author: Dwight David Eisenhower

Title: Farewell Address

Date: January 17, 1961

Quote from a comment posted

on: http://www.ted.com/talks/jackson_browne_if_i_could_be_anywhere.html

That said, Alan Watts, a man who changed my life for ever, did actually not place blame on society. To him the very idea of 'OTHER' was a joke "that I play on myself" in a cosmic game of hide and seek. As John Lennon put it, 'I am he, as you are me and you are he and we are all together...'

To Alan Watts, there was no "Other" to blame. I am the environment and I am the pollution that I am spreading, so there cannot possibly be anything to pollute but myself. And as you are me, I can harm no one but myself.

As to Christians, one of which I no longer am, My father who was an Evangel and would have been 99 on April, 11, 2011 had he lived this long, was the first person I ever met who was extremely worried about the environment. He taught me from my birth onward to respect nature and ALWAYS to clean up after myself on camping trips

and nature walks. He taught that to me in the 1950's, though he had been practicing and, if you will, 'Preaching' the dangers of a degrading environment since the 1920's. He was so concerned about the loss of trees that he taught me that when wiping, one should fold their toilet paper, and wipe again, to reuse it as many times as one can do without musing one's hand. A practice I have followed all of my life, thus using up to 75% less trees than the average person when cleaning one's tucks.

Me, a non-Christian American and he a very Christian American both worked to raise awareness about the danger to the environment all of our lives.

Every nation presented with the opportunity to possess things will make every effort to possess them. The problem is one of human nature and not national "this-that-or-the-other-thing. And with all respect intended, I say it serves no useful purposes to pick one's favorite political opponent, "The enemy Du jour" to throw stones at, when what we need is everyone putting a colossal, unified effort into breaking this horrible pattern of planetary degradation.