

Advanced Metering Infrastructure or The Smart Electricity Grid

**Unintended consequences of
smart meter placement**

Don Maisch PhD
dmaisch@emfacts.com

Smart meters and bedrooms

- In Victoria, smart meters are rapidly replacing existing analogue electricity meters statewide. Rollout planned nationally.
- Transmit data wirelessly back to the network - no need for meter readers.
- Many homes have the existing analogue meter box on a bedroom wall and when this has been replaced with a smart meter there are widespread reports of insomnia and fatigue afterwards.

Consider the totality of transmissions

TABLE 2-1

Electric System Message Type [a]	Transmission Frequency Per 24-Hour Period: Average [b]	Transmission Frequency Per 24-Hour Period: Maximum (99.9 th Percentile) [c]
Meter Read Data	6	6
Network Management	15	30
Time Synch	360	360
Mesh Network Message Management	9,600	190,000
Weighted Average Duty Cycle	45.3 Seconds ¹	875.0 Seconds

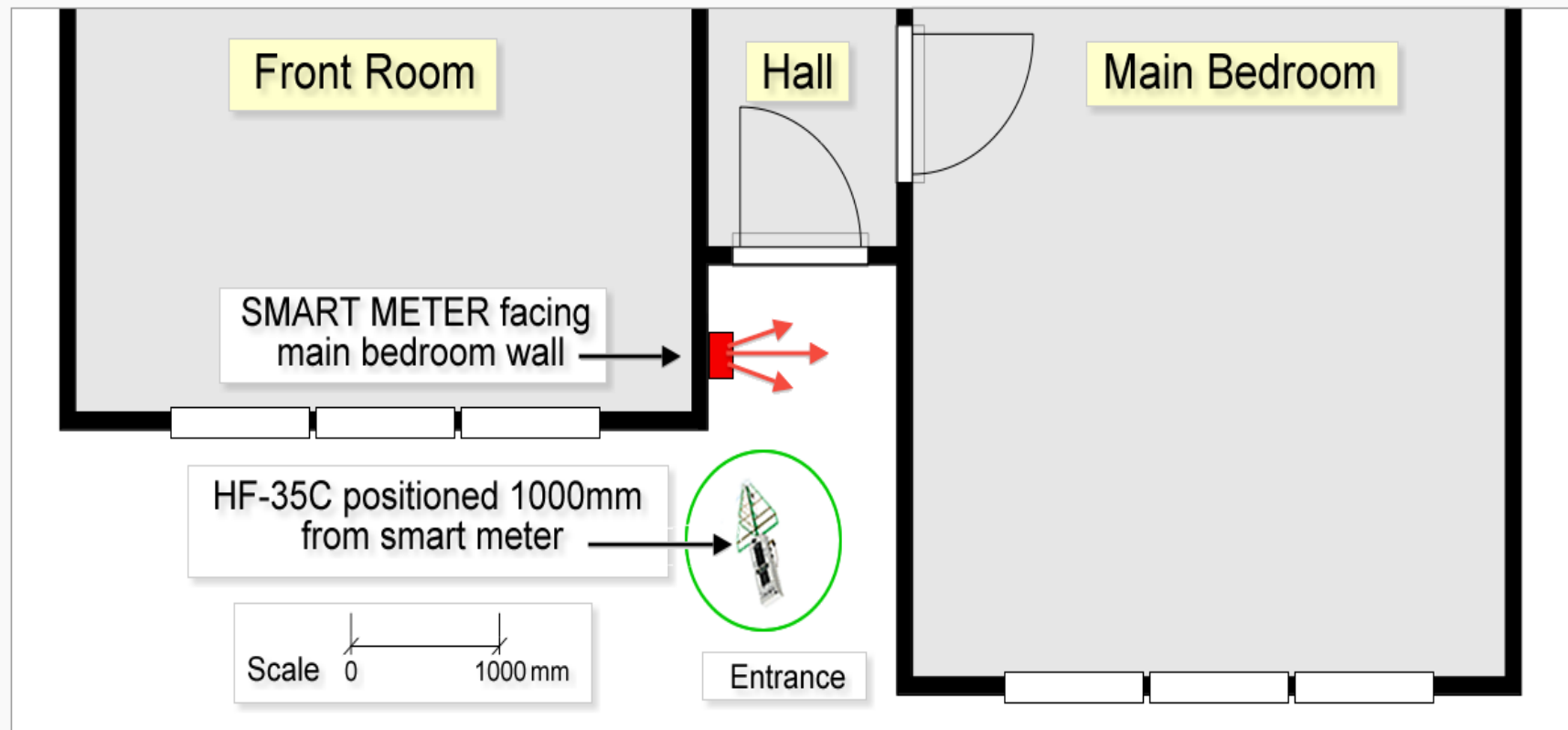
NOTE: This is for the 900 MHz radio only. The 2.4 Ghz radio is not yet activated

Ref: Pacific Gas and Electric Co.,

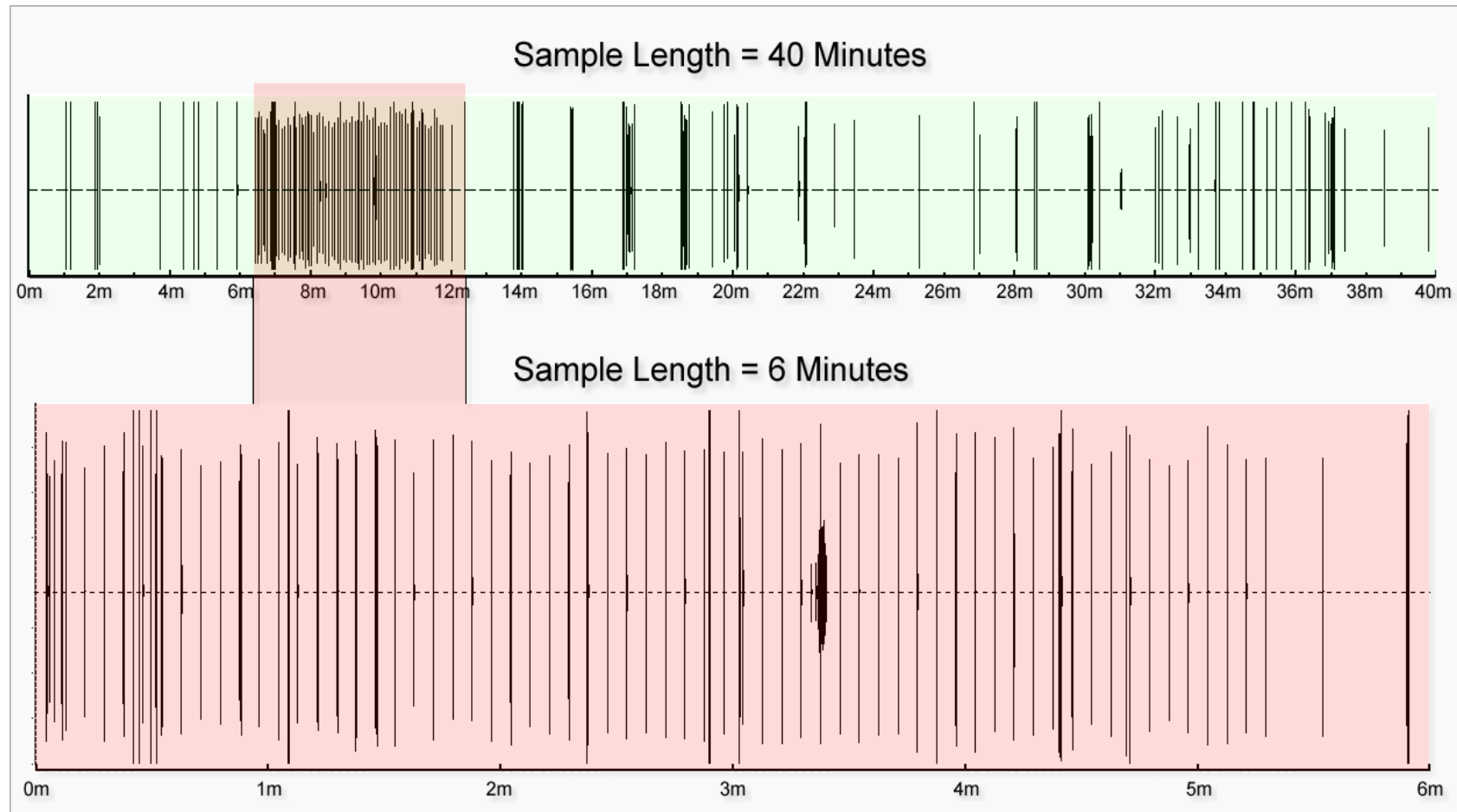
http://emfsafetynetwork.org/wp-content/uploads/2011/11/PGERFDataOpt-outalternatives_11-1-11-3pm.pdf

SMART METER TRANSMISSION INTERVALS

Site Plan & Location of Monitoring Equipment
OUTSIDE FRONT DOOR

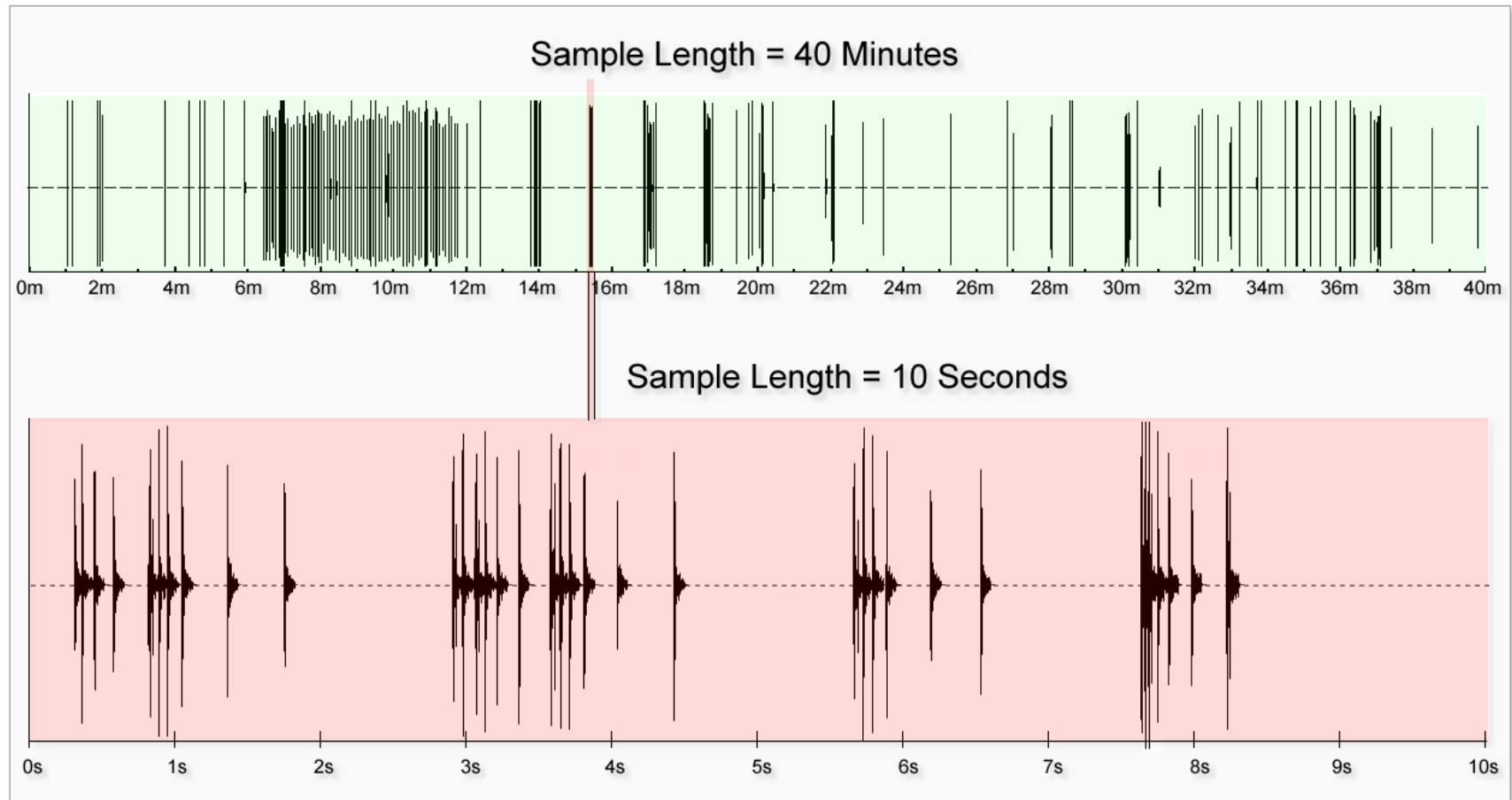


SMART METER TRANSMISSION INTERVALS



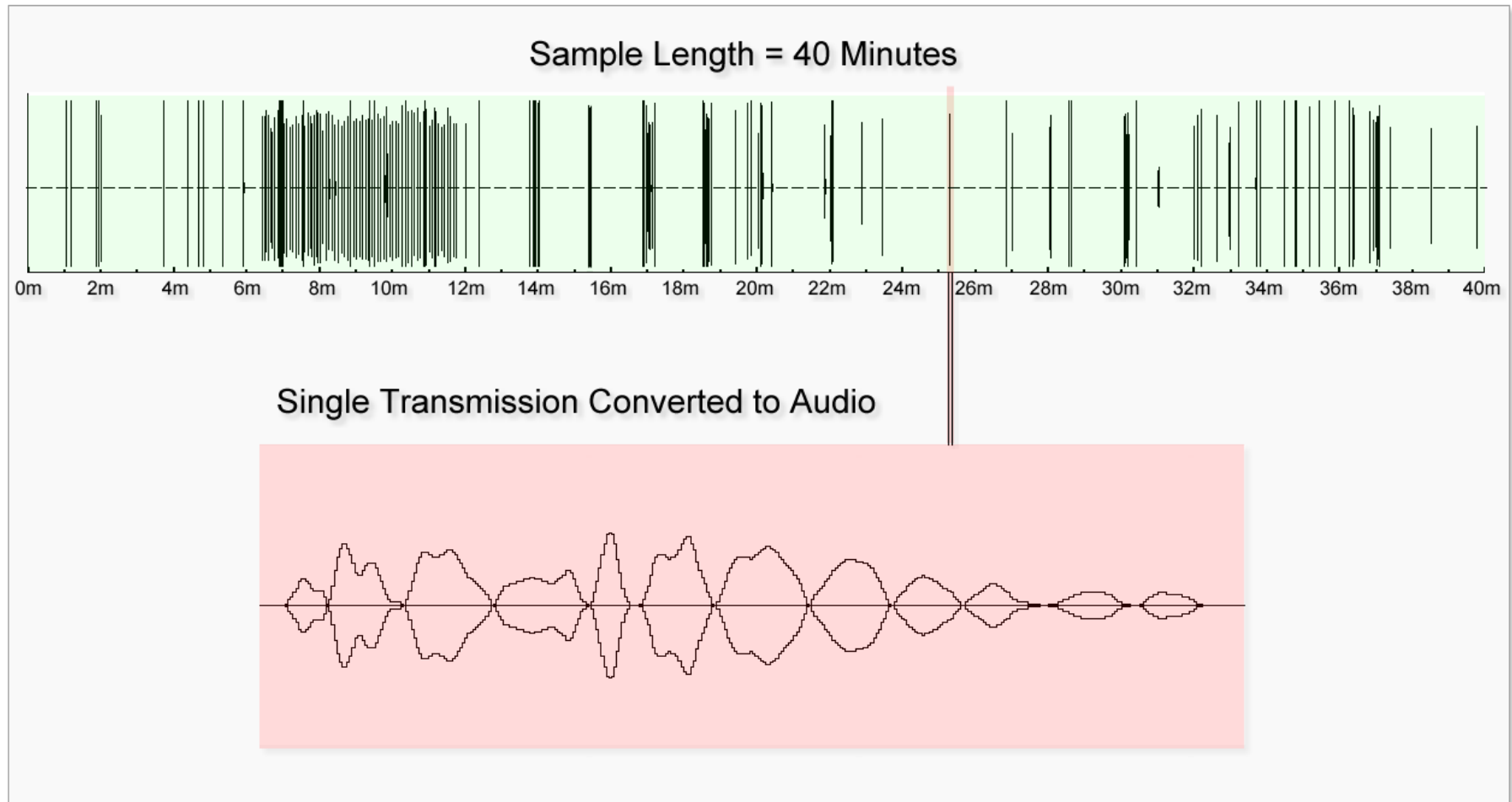
OUTSIDE FRONT DOOR

SMART METER TRANSMISSION INTERVALS



OUTSIDE FRONT DOOR

SMART METER TRANSMISSION INTERVALS

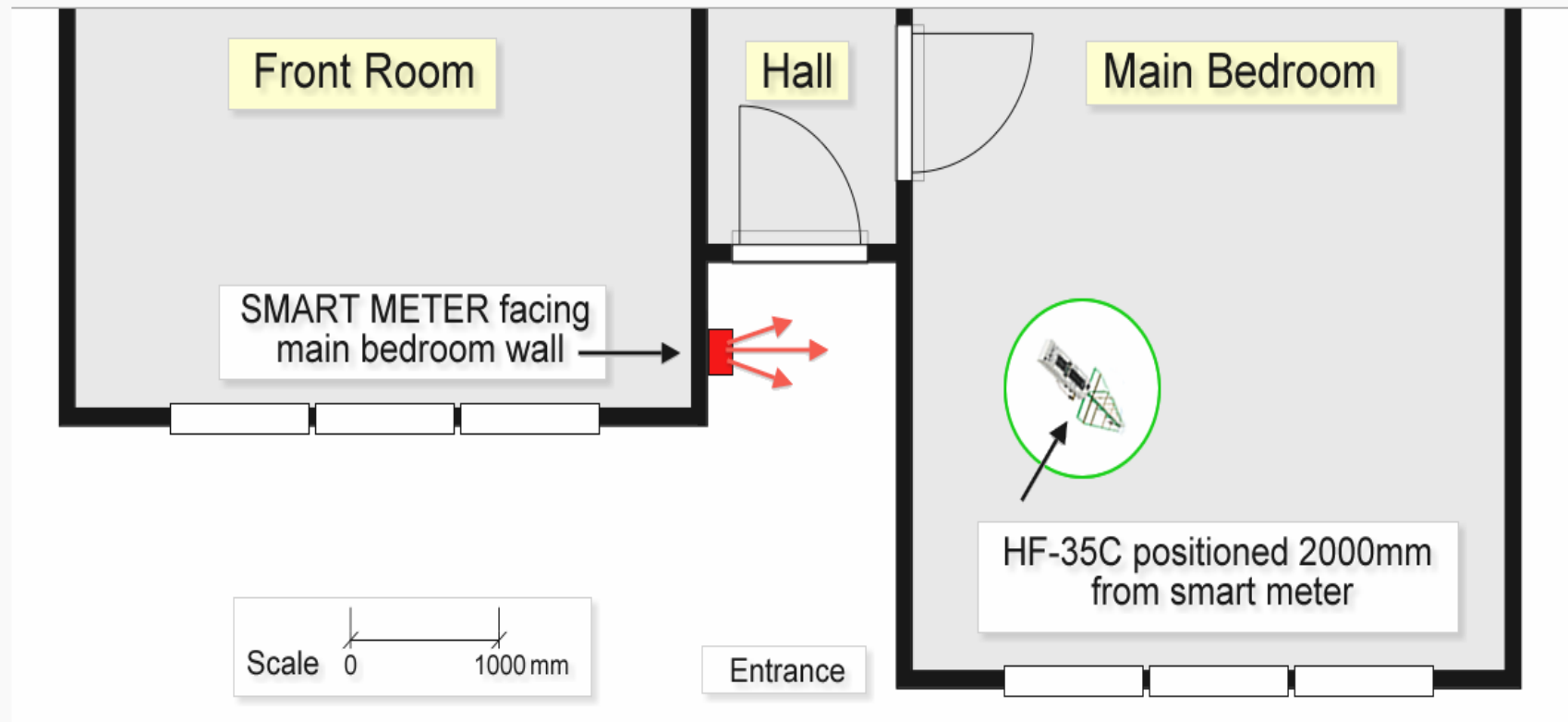


OUTSIDE FRONT DOOR

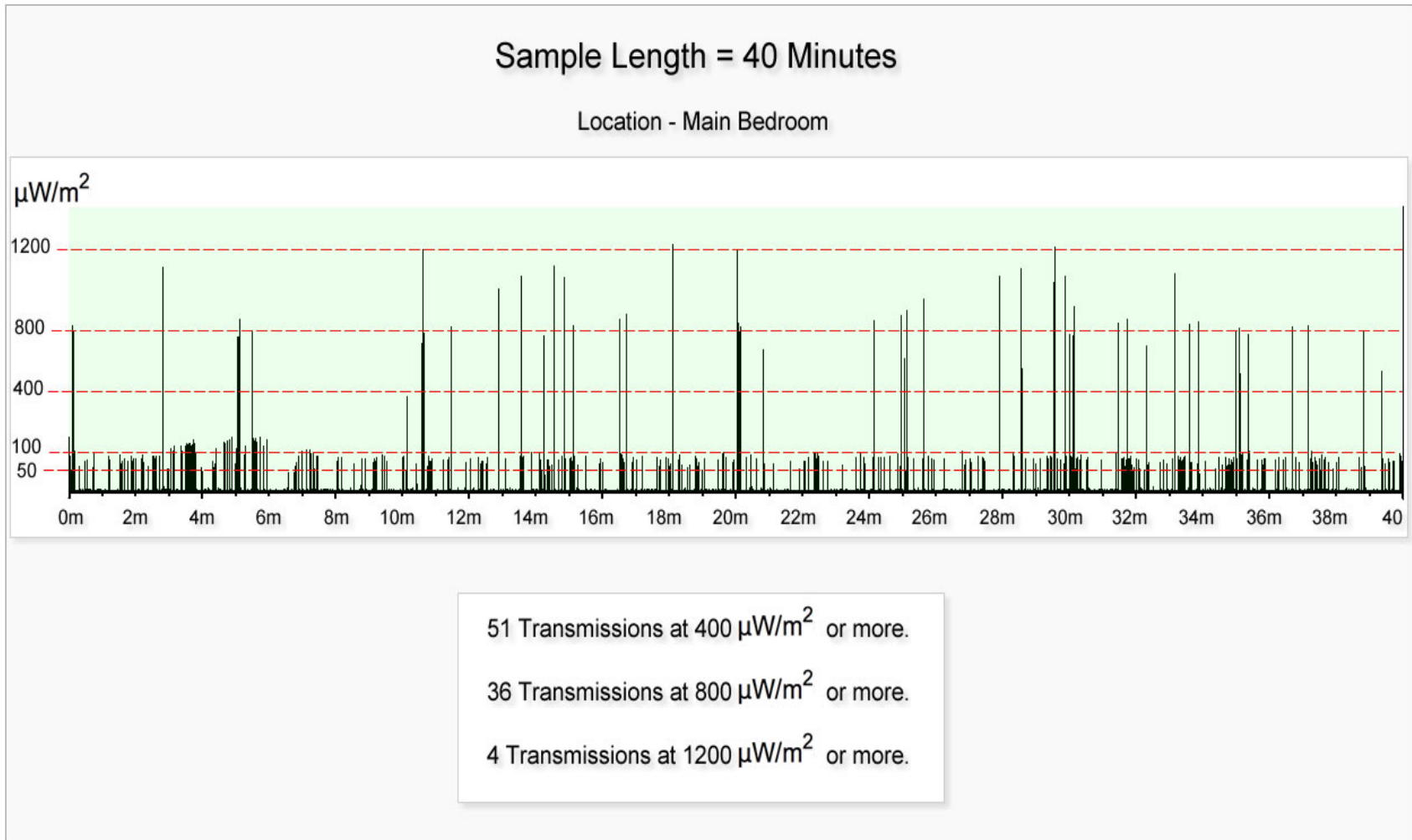
SMART METER TRANSMISSION INTERVALS

Site Plan & Location of Monitoring Equipment

MAIN BEDROOM



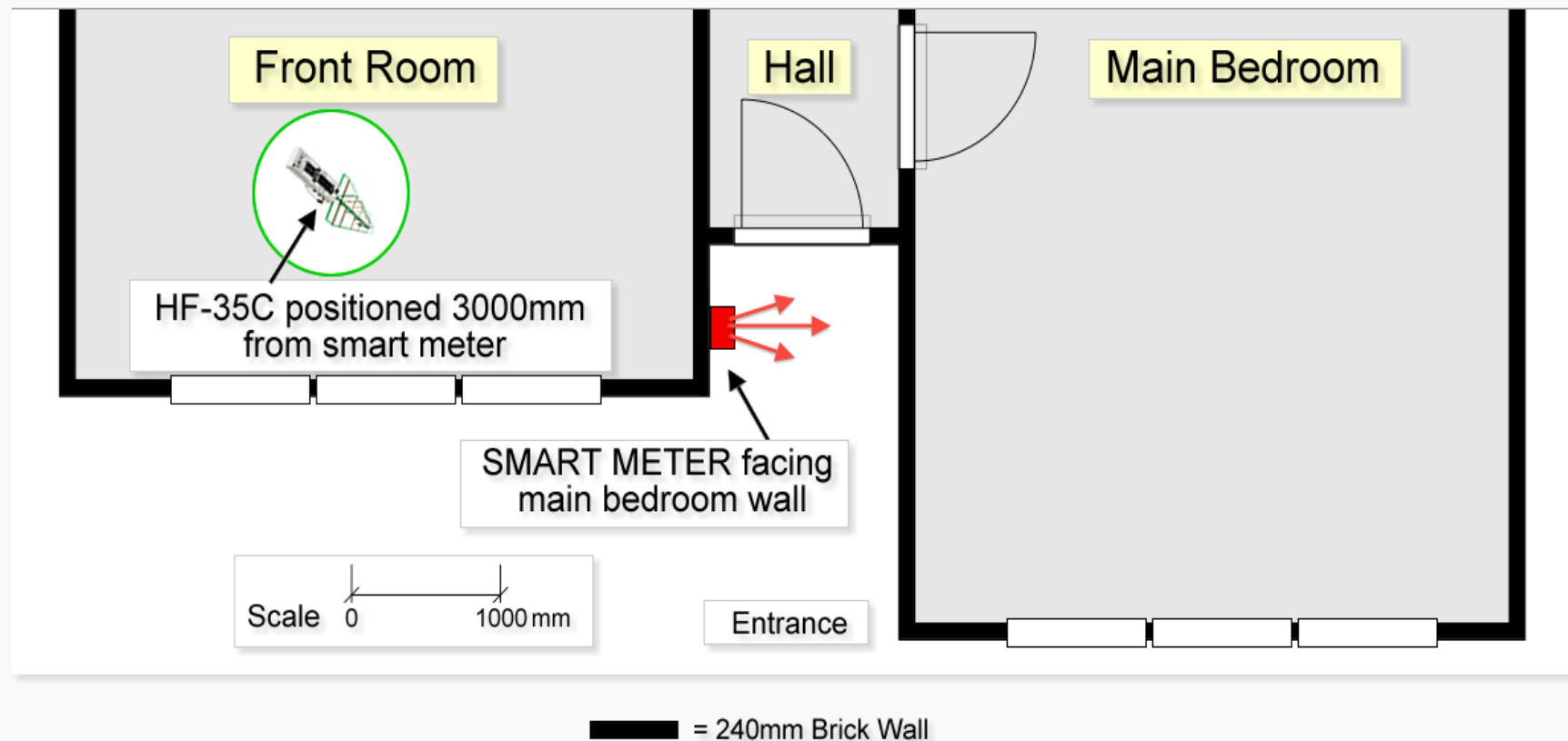
SMART METER TRANSMISSION INTERVALS



SMART METER TRANSMISSION INTERVALS

Site Plan & Location of Monitoring Equipment

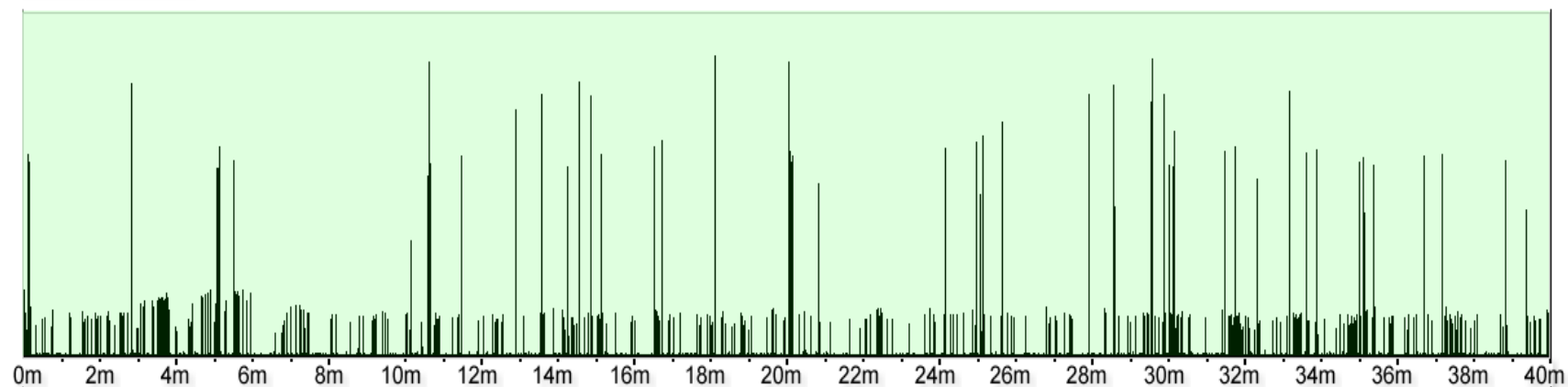
FRONT ROOM



SMART METER TRANSMISSION INTERVALS

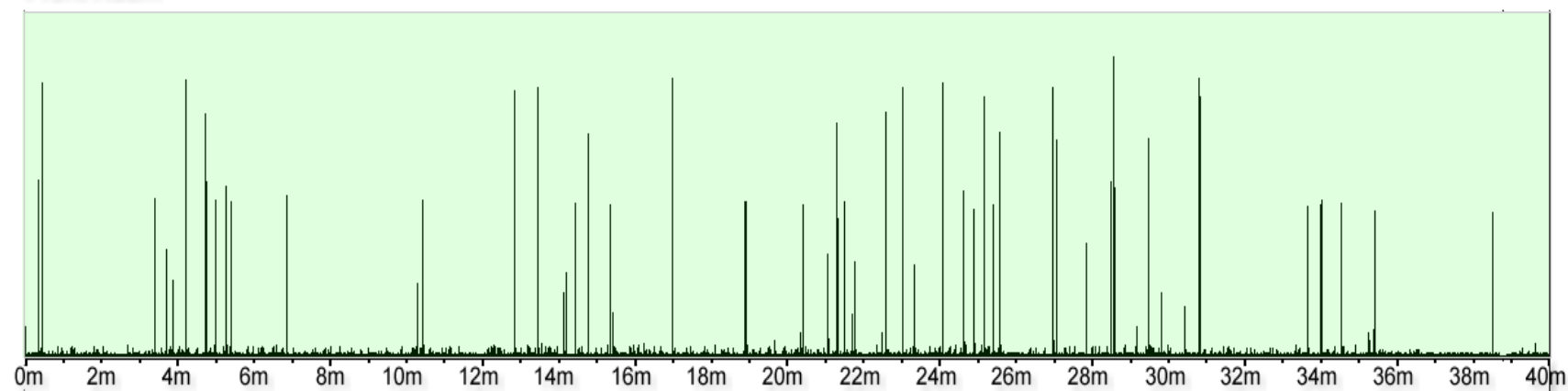
Main Bedroom

Sample Length = 40 Minutes



Front Room

Sample Length = 40 Minutes



Cases reported in the Melbourne area

Case 1

“My symptoms started the night the smart meter was installed (externally on the bedroom wall). Waking with heart palpitations and a racing heart and internal shakiness. A surging feeling that went right through my body now and then. Head pain and a burning pain on the left side of the head. Depleted immune system, leading to flu and cold. I am now getting nausea and maybe 2 -3 hours sleep a night.”

Ref: Personal interview

Case 2

“Since installation, I wake up with headaches every single morning and go to bed with something very much like vertigo every night. I have had this ever since the smart meter was installed. It is also installed on my front porch which is right outside my bedroom, so I am very close to it.”

Ref: <http://stopsmartmeters.com.au/health-researchsafety/>

Case 3

“Since my smart meter was installed, I have experienced shortness of breath, palpitations, and headaches mainly at the back of my head. Could it be because the position of the meter is on the other side of the wall where I sit every night while watching TV? What can I do about it? I have no room to change the position of the couch and my symptoms are getting worse by the day.”

Ref: <http://stopsmartmeters.com.au/health-researchsafety/>

Case 4

“It is very likely that your new smart meter or your neighbour’s (if their meter is close by) is affecting you. I experienced the same issues as you described from my neighbour’s two smart meters located three metres from my bedroom. After complaining to Powercor, I found that they must have reconfigured them as they are not communicating as much (confirmed with an EMF meter). My heart palpitations/ pain in my chest has gone but I still am waking up with headaches (although they are not as intense as before the meter was reconfigured).”

Ref: <http://stopsmartmeters.com.au/health-researchsafety>

Case 5

“I have developed ringing in my ears that would go away when I went to work. Now I have had two months off work, the ringing is constant. I have developed a thyroid problem since the smart meter was installed. I wake up aching. The meter is next to my bedroom wall.”

Ref: <http://stopsmartmeters.com.au/health-researchsafety>

Case 6

“Our smart meter was installed about two years ago. Our town in central Victoria was one of the earliest in the roll-out. Since its installation (outside my bedroom window), my health and the general health of my family has gone downhill rapidly...I suffer from severe headaches, memory loss, loss of motor skills. I feel as though I am walking around in a haze. I lie awake until daylight some nights, and others it is 1-2 pm when I wake up. There is also the high-pitched squeal that the smart meter emits constantly.”

Ref: <http://stopsmartmeters.com.au/health-researchsafety>

Case 7

“I came to Australia after a smart meter was fitted two metres below my bedroom window in NZ. I was not informed of the radiation danger. I subsequently experienced severe health problems and was at a loss to explain this. One of my students wrote a report about her own experiences with smart meters and I had to mark it. I began to put two and two together. The report probably saved me serious health problems.”

Ref: <http://stopsmartmeters.com.au/health-researchsafety>

Case 8

“A smart meter installed Aug 2012 unbeknownst to homeowner. A high-pitched sound started that night, kept him awake. His inspection the next day found the new smart meter in his meter box. Ongoing insomnia, tinnitus and overall deterioration in health since then. Shielding has helped, but ongoing difficulty in sleep and tinnitus continues.”

Ref: Personal interview

Case 9

“My son, aged 22, started work in a small graphic design studio in Fitzroy. After only being there a few weeks, he started to become quite unwell. He was getting severe dizziness, headaches, couldn't see straight or concentrate and was getting heart palpitations and extreme kidney pain, so much so that he had to take several days off to recover. On returning to work, the same thing happened again and by lunchtime he had to leave. As it was a Friday, he was able to have the weekend away and started to improve.”

(continued)

Case 9, continued

“The next week, his problems recurred yet again and it was then that he discovered that there was a smart meter situated inside a wooden box only about two metres from his head. (Just to rule out any other cause, he underwent medical tests – ECG, blood test and kidney scan – which all came back clear.) Finding that he was only getting worse at work, he felt he had no alternative but to resign. He is now ‘sensitised’ to EMR and gets quite dizzy when exposed to it.”

Ref: personal interview

Case 10

“I’ve been trying to find the answers to the question of the nightmare of noise mostly at night emitting through the walls of my home , it all started when a smart meter was installed on the outside wall of our home in Sebastopol Victoria Australia...It has taken a tremendous toll on my health as the noise is ongoing. Many people I have spoken to have the same story to tell. We also have a neighbors' smart meter facing our bedroom window.”

Case 10, cont.

“I can’t say this is the answer, but its strange to think it all started with the installation of the meter. I have such a problem sleeping now I am always exhausted. I’ve been unable to get a response from the installers they simply do not want to reply.”

Ref: <http://sandaura.wordpress.com/2011/03/23/a-constant-non-stop-low-frequency-hum-heard-in-my-home/#comment-792>

The Schwarzenburg transmitter study

- As a result of ongoing health complaints, the Swiss government's energy agency (SFDTE) commissioned a study of the residents surrounding the transmitter site.
- Significant associations were found with proximity and health problems, primarily restlessness, falling asleep and ability to maintain sleep.

Ref: www.avaate.org/IMG/pdf/som_11_05.pdf

The Schwarzenburg transmitter study

- 55% of residents suffered from disturbed sleep.
- 35% suffered from insomnia.
- Similar effects seen in a New Zealand transmitter site in Ouruhia: 37% suffered from fatigue and 35% suffered from sleep problems.
- These are apparently at power levels similar to when a smart meter is in close proximity to a bed.

Ref: www.avaate.org/IMG/pdf/som_11_05.pdf

The Schwarzenburg transmitter study

- Sleep disturbance was associated with a maximum exposure of 18.5 mW/m^2 , with a mean nocturnal exposure of less than 7 mW/m^2 .
- People living in a mean RF exposure of 38 mW/m^2 had significantly elevated levels of restlessness, sleep disruption, aches and pains.

Ref: N. Cherry, Swiss shortwave transmitter study sounds warning,
Electromagnetics Forum, Vol. 1, No. 2, Article 10,
http://www.emfacts.com/forum/issue2/mag_9.html

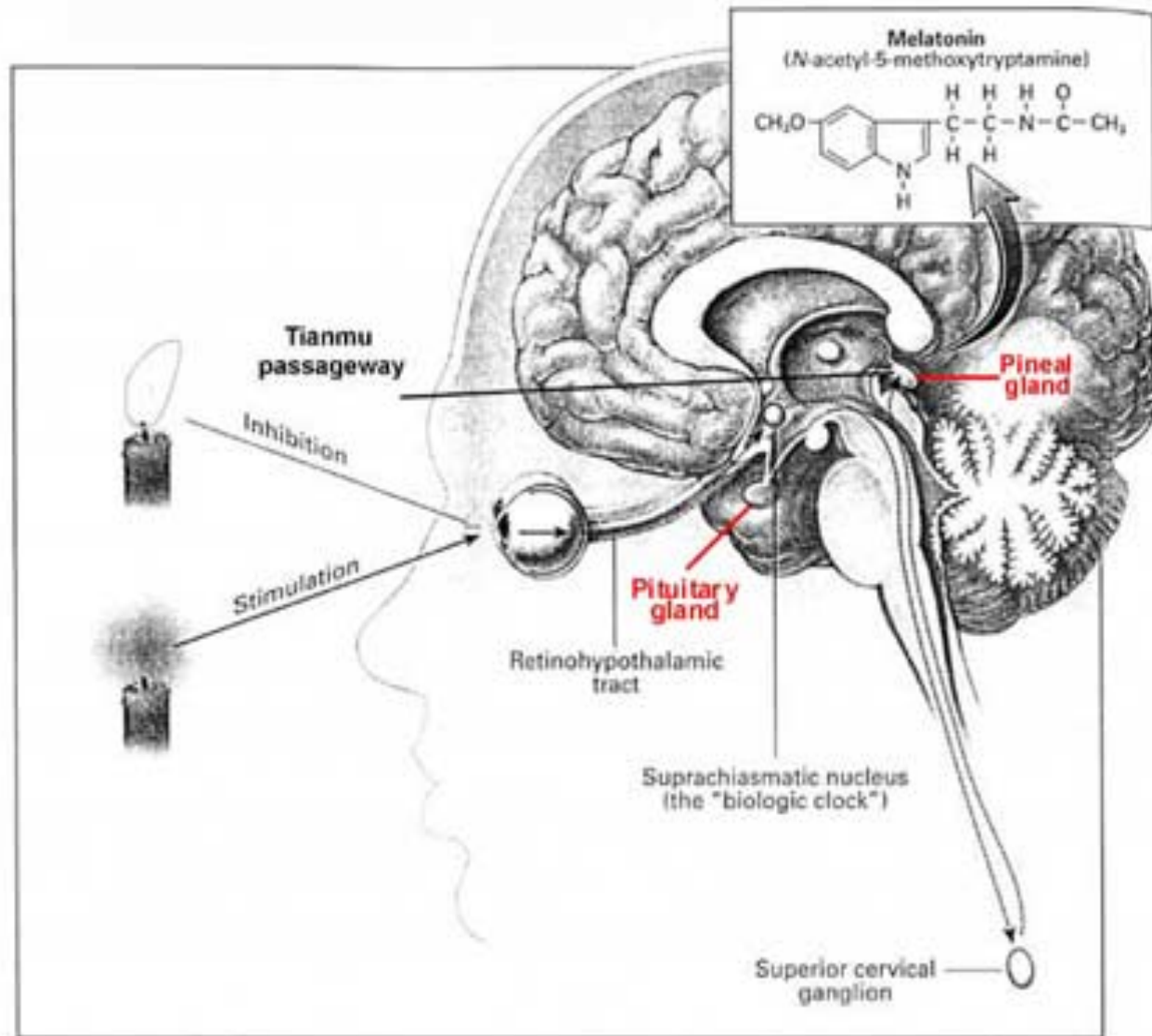
The Schwarzenburg transmitter study

- “Our findings support a relationship between operation of the radio transmitter under investigation and sleep disturbances in the exposed population... From a public health perspective, our findings call for caution in exposing populations to EMF from short-wave radio transmitters.”

Ref: <http://www.ideaireland.org/2006.00%20Altpeter%20et%20al.pdf>

Research needs

- Anecdotal evidence suggests that sleeping in close proximity to an active smart meter (such as externally on a bedroom wall) exposes the person to constant but brief transient RF transmissions that may be adversely affecting their sleep quality.
- Prolonged exposure during the day (such as at a workplace) maybe an OH&S issue.



Is it possible that the pineal gland is somehow sensing Smart meter RF transmissions as 'light'?

Inconvenient truths?

- To date absolutely no research specific to this issue has been conducted anywhere.
- The Australian government's "Power of Choice Review" (blueprint for a national rollout) fails to even consider this aspect in its national smart grid promotion.
- There is an urgent need for focused sleep research to determine if this is an emerging public health crisis.