Supplementary Materials:

S1. Survey questionnaire of consumers' perception of and purchase intention for heat pump water heaters (HPWHs)

1. The province and city where your family has lived for a long time. [Fill in the blank question]

2. The housing area of your family (a long-term house; living together counts as a family unit). [Single choice question]

○<60 m² ○60–90 m² ○90–140 m² ○140–280 m² ○>280 m²

3. The occupation group in which the highest-income person in your family (people living together) belongs. [Single-choice question]

○Government or public institution personnel
○Operation and senior management personnel (CEOs, commercial managers, industrial managers, hotel managers, etc.)
○Management and professional technical personnel (in science and engineering, health, education, business, information, society, etc.)
○General technicians and professional assistants (in science and engineering, health, education, business, information, society, etc.)
○Clerks (customer service clerks, digital and material recording clerks, etc.)
○Service and sales staff (in personal service, sales, personal care, protection services, etc.)
○Agriculture, forestry, animal husbandry and fishery technicians (gardeners; animal husbandry, planting, and breeding workers; etc.)
○Crafts and related industries (machinery/metal industry, handicrafts, printing, electrical, food processing, woodworking, etc.)
○Operators and assemblers of machinery and equipment
○Military-related occupations
○Basic-level occupations (cleaners, helpers, farmers, short-term workers, etc.)
○Freelance

4. How many adults with monthly income are in your family? (family members living together) [Matrix question]

	0 adults	**1 adult**	**2 adults**	**3 adults**	**4 adults**
No monthly income	○	○	○	○	○
Monthly income: 270 yuan and below	○	○	○	○	○
Monthly income: 270–1100 yuan	○	○	○	○	○
Monthly income: 1100–2050 yuan	○	○	○	○	○
Monthly income: 2050–4500 yuan	○	○	○	○	○
Monthly income: 4500–9800 yuan	○	○	○	○	○
Monthly income: 9800–22500 yuan	○	○	○	○	○
Monthly income: 22500–41000 yuan	○	○	○	○	○
Monthly income: 41,000 yuan and above	○	○	○	○	○

5. Where does your family live? [Single-choice question]

○Urban area ○Suburb ○Rural area

6. What kind of equipment is used to heat water (to provide hot water) in your current home? [multiple-choice question]

○Solar water heater ○Electric water heater ○Gas (including liquefied gas) water heater ○Heat pump water heater (air source heat pump water heater) ○Coal stove

An air source heat pump water heater (or heat pump water heater) has high efficiency and energy savings. When the same amount of hot water is manufactured, the energy consumption of air source heat pump water heaters is one quarter of that of electric water heaters. Additionally, HPWHs avoid electric leakage (a risk associated with electric water heaters) and gas poisoning (a risk associated with gas water heaters). Air source heat pump water heaters are unaffected by being indoors or outdoors and sunny or cloudy days, but these water heaters are more expensive than ordinary water heaters and carry a large tank, so air source heat pump water heaters occupy a large space.

7. After reading the materials, do you agree with the following statement about air source heat pump water heaters? [Scale questions]

For me, purchasing an air source heat pump water heater is

○Extremely unfavorable ○ ○ ○ ○Extremely favorable

For me, purchasing an air source heat pump water heater is

○Extremely bad ○ ○ ○ ○Extremely good

For me, purchasing an air source heat pump water heater is

○Extremely undesirable ○ ○ ○ ○Extremely desirable

Most people who are important to me think I should purchase an air source heat pump water heater.

○Strongly disagree ○ ○ ○ ○Strongly agree

Most people who are important to me would want me to purchase an air source heat pump water heater.

○Strongly disagree ○ ○ ○ ○Strongly agree

People whose opinions I value would prefer that I purchase an air source heat pump water heater.

○Strongly disagree ○ ○ ○ ○Strongly agree

I believe I can purchase an air source heat pump water heater.

○Strongly disagree ○ ○ ○ ○Strongly agree

I have the money and time to purchase an air source heat pump water heater.

○Strongly disagree ○ ○ ○ ○Strongly agree

I am confident that if I want, I can purchase an air source heat pump water heater.

○Strongly disagree ○ ○ ○ ○Strongly agree

I think air source heat pump water heaters can save energy and protect the environment.

○Strongly disagree ○ ○ ○ ○Strongly agree

I think air source heat pump water heaters are safer than ordinary electrical appliances.

○Strongly disagree ○ ○ ○ ○Strongly agree

I think air source heat pump water heaters outperform ordinary electrical appliances.

○Strongly disagree ○ ○ ○ ○Strongly agree

I think air source heat pump water heaters are unaffected by the weather, convenient and quick.

○Strongly disagree ○ ○ ○ ○Strongly agree

I think air source heat pump water heaters positively affect national energy transformation.

○Strongly disagree ○ ○ ○ ○Strongly agree

I think air source heat pump water heaters occupy a large space, thereby wasting my home activity space.

○Strongly disagree ○ ○ ○ ○Strongly agree

I think the price of air source heat pump water heaters is higher than that of ordinary water heaters and that air source heat pump water heaters are a waste of money.

○Strongly disagree ○ ○ ○ ○Strongly agree

8. Please select the appropriate frequency according to your actual situation. [Scale questions]

I have seen the government's promotion information on air source heat pump water heaters.

○Never ○ ○ ○ ○Always

I have seen enterprise publicity on air source heat pump water heaters.

○Never ○ ○ ○ ○Always

I have seen information about air source heat pump water heaters through mobile phones, newspapers and other media.
○Never ○ ○ ○ ○Always
I have exchanged information about air source heat pump water heaters with relatives and friends.
○Never ○ ○ ○ ○Always
I have exchanged information about air source heat pump water heaters with my neighbors and colleagues.
○Never ○ ○ ○ ○Always
I have discussed information about air source heat pump water heaters with netizens on the internet.
○Never ○ ○ ○ ○Always
9. If my family needs to replace the water heater, I plan to buy an air source heat pump water heater. [Scale questions]
○Strongly disagree ○ ○ ○ ○Strongly agree
10. If a new house is purchased, the developer had installed an air source heat pump water heater on the balcony, and the water heater covers an area of approximately 1 square meter, you will [single-choice]
○Retain and use the air source heat pump water heater.
○Buy another water heater and use both heaters.
○Remove and sell the air source heat pump water heater and install another water heater.
○Have temporary uncertainty.

Table S1. Constructs, indicators and sources.

Constructs	Indicators	Sources
Attitude	For me, purchasing an air source heat pump water heater is Extremely unfavorable/Extremely favorable	Han and Kim [78]
	For me, purchasing an air source heat pump water heater is Extremely bad/Extremely good	
	For me, purchasing an air source heat pump water heater is Extremely undesirable/Extremely desirable	
Subjective norm	Most people who are important to me think I should purchase an air source heat pump water heater.	Han and Kim [78]; Chen and Tung [79]
	Most people who are important to me would want me to purchase an air source heat pump water heater.	
	People whose opinions I value would prefer that I purchase an air source heat pump water heater.	
Perceived behavioral control	I believe I can purchase an air source heat pump water heater.	Han and Kim [78]
	I am confident that if I want to, I can purchase an air source heat pump water heater.	
	I have the money and time to purchase an air source heat pump water heater.	
Official information	I have seen the government's promotion information on air source heat pump water heaters.	
	I have seen the publicity from enterprises on air source heat pump water heaters.	
	I have seen information about air source heat pump water heaters through mobile phones, newspapers and other media.	

Unofficial information	I have exchanged information about air source heat pump water heaters with relatives and friends. I have exchanged information about air source heat pump water heaters with my neighbors and colleagues. I have discussed information about air source heat pump water heaters with netizens on the internet.	
Perceived usefulness	I think air source heat pump water heaters save energy and protect the environment. I think the safety of air source heat pump water heater is higher than that of ordinary electrical appliances. I think air source heat pump water heaters outperform ordinary electrical appliances.	Hua and Wang [77]; Choi and Totten [76]
Purchase intention	If my family needs to replace the water heater, I plan to buy an air source heat pump water heater.	Han and Kim [78]